



Parental and Family-Level Sociocontextual Correlates of Emergent Emotion Regulation: Implications for Early Social Competence

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Abstract

Objectives Emotion regulation skills in early childhood are essential for healthy emotional and behavioral development, yet factors related to emergent emotion regulation during the early preschool period have not been extensively explored.

Methods In the present study ($N = 90$), we specifically examine parental and family-level sociocontextual correlates in relation to emotion regulation skills in three-year-olds, a crucial time when the onset of several cognitive and socioemotional abilities are intertwined. We also investigate the role of these developing emotion regulatory capacities with behavioral problems and social competence.

Results Children whose parents use more adaptive emotion regulation strategies ($r = 0.33, p = 0.001$) and who grow up in a higher income ($r = 0.25, p = 0.02$), less chaotic household ($r = -0.30, p = 0.004$) have better emergent emotion regulation. Additionally, better child emotion regulation skills are associated with more positive outcomes such as fewer behavioral problems ($r = -0.46, p < 0.001$) and more instrumental helping behaviors ($r = 0.23, p = 0.04$).

Conclusions Findings indicate that identifying individual differences in emotion regulation earlier than most prior studies may be particularly important for fostering this crucial skill and overall psychological well-being in young children.

Keywords Emotion regulation · Preschool · Socioeconomic status · Behavior problems · Prosocial behavior

Highlights

- Parental emotion regulation (ER) strategies associated with emerging ER skills.
- Socioeconomic status and household chaos linked to preschool ER development.
- Early adaptive ER skills related to prosociality and socio-emotional well-being.

Emotion regulation, the ability to manage elicited emotions in various contexts, is critical for adaptive functioning and for children's psychological well-being (Shipman et al. 2007). Difficulties with emotion regulation are associated with greater levels of behavior problems, problems with peers, and later psychopathology (Blandon et al. 2008). Much of the research on emotion regulation development

focuses on the period from late preschool into kindergarten when these skills have relevance to school readiness (Eisenberg et al. 2005; Zhou et al. 2007) and it is a time when children increase socialization with peers and learn to manage their emotions (Cole et al. 2009). However, more research is needed in earlier childhood, specifically the transitional period between toddlerhood and preschool, when there is rapid development in cognitive domains critical to emotion regulation. For example, theory of mind and executive function are prerequisites of emotion regulation (Carlson et al. 2004; Denham and Kochanoff 2002). Additionally, adaptive emotion regulation skills promote other social-emotional capacities, such as prosociality (Hastings et al. 2014). Given the importance of children's capacity for emotion regulation across multiple domains of social and psychological adjustment, it is essential to first identify early environmental factors that contribute to

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individual differences in emotion regulation skills in this early preschool period and second, to examine how emergent emotion regulation skills may be a marker for early social competency.

Parenting plays an important role in children's development of emotion regulation (Morris et al. 2007; Thompson and Meyer 2007). Many studies implicate the important contribution of parental responsiveness (Cassano et al. 2007; Yap et al. 2008) and warm versus hostile parenting styles (Jaffe et al. 2010; Morris et al. 2002) on children's developing ability to self-regulate their emotions. However, many of these studies conceptualize emotion regulation differently, ranging from the level of negative affect displayed (Del Vecchio and Rhoades 2010) to coping strategies used by older children (Jaffe et al. 2010). Only a few studies have examined parenting behaviors and emotion regulation specifically in the 2- to 4-year-old age range (Karreman et al. 2008; Robinson et al. 2009). More work is needed to further strengthen evidence that supportive and nurturing early caregiving experiences (e.g. interactions rich in scaffolding behaviors, sensitivity and security) can provide a stimulating environment for children to acquire emotion regulation skills.

Beyond general parenting characteristics, there is some evidence that parent's own emotion regulation abilities are related to their child's developing emotion regulation capacities (Morris et al. 2007). When parents have dysregulated emotions, their children are more likely to demonstrate poor social, behavioral, and emotional competence (Compton et al. 2003). Researchers argue that for a parent to be an adequate emotion socialization agent for the child, they themselves need to adaptively manage their own emotions (Bariola et al. 2011). Some emotion regulation theorists suggest that children imitate their parents' emotion regulation through modeling and social referencing (Bridges et al. 2004; Morris et al. 2007). Several studies have highlighted a link between parent's emotional control strategies and children's emotion regulation. Morris and colleagues (2011) found that following disappointment, maternal attempts at attention refocusing and cognitive reframing were associated with less expressed anger and sadness in young children. Ellis et al. (2014) found an association between mothers who engaged in emotion coaching and a decrease in children's negative mood swings. A gap to consider is investigating whether there are different implications for emergent emotion regulation if parents themselves use different emotion regulation strategies. Two specific strategies are central to empirical research on emotion regulation in older children and adults, cognitive reappraisal and expressive suppression. Cognitive reappraisal involves construing a potentially emotion-eliciting situation in a way that changes the emotional impact (Lazarus and Alfert 1964) and is considered an adaptive emotion regulation strategy associated with fewer depressive symptoms and greater life

satisfaction (Gross and John 2003). Expressive suppression involves inhibiting ongoing emotion-expressive behavior (Gross 1998) and considered less effective in reducing the experience of emotions and related to fewer positive relationships and poorer self-esteem (Gross and John 2003). Studies have yet to examine how parental use of cognitive reappraisal and expressive suppression relates to child emotion regulation during this critical period when children are first acquiring emotion regulation skills and parental models may be most influential.

Family-level sociocontextual factors may also play a role in emergent emotion regulation skills. Stressors associated with living in poverty can compromise children's emotional adjustment (Bassett et al. 2012; Hackman and Farah 2009). Children growing up in low-income households tend to exhibit fewer and poorer emotion regulation skills compared to their more economically stable peers (Blandon et al. 2008; Brown and Ackerman 2011; Raver et al. 2013). These studies and others have demonstrated a link between poverty and the development of emotion regulation skills in 4- to 7-year olds, but because emotion regulation skills are important predictors of academic success and overall adaptive functioning, it is important to examine this link even earlier in childhood to better address SES gaps in achievement and socio-emotional adjustment.

One of the many factors related to poverty is chaotic households. Cumulative stress, lack of resources, shifting work schedules and single parenthood account for higher levels of chaos in low-income households compared with more economically advantaged households (Ackerman and Brown 2010). Chaos in the home has been associated with poor self-regulation (Evans et al. 2013) while stable family routines promote children's self-regulation (Brody and Flor 1997). However, most studies on household chaos and related outcomes typically focus on behavioral self-regulation (i.e. inhibitory control, effortful control) rather than emotion regulation. To our knowledge, there has only been one study that found an association between household chaos and emotion regulation in 4 year olds (Raver et al. 2015). Studies have not yet looked at how household chaos may relate specifically to three-year-olds' ability to manage emotions. This could have important implications for pinpointing a direct aspect of children's environments that could be a target for intervention, regardless of SES.

It is well established that maladaptive patterns of emotion regulation can compromise emotional and social functioning which may result in symptoms of psychopathology (Eisenberg et al. 2001; Kim and Cicchetti 2009). Children with internalizing symptoms, such as anxiety or depression, show emotional deficits including impoverished emotional awareness and dysregulated emotional expression (Eisenberg et al. 2001). Similarly, children with poor emotion regulation exhibit externalizing symptoms such as

aggression and undercontrolled behaviors in social interaction which lead to isolation and rejection in peer contexts (Hanish et al. 2004). While these findings and a host of others demonstrate a strong link of emotion regulation with behavioral and emotional problems, it is less clear how emergent emotion regulation skills relate to other facets of adaptive social competence, such as prosocial behavior and positive interactions with caregivers.

A hallmark of social competence is prosocial behavior, a voluntary action intended to benefit another person (Grusec et al. 2011), and often regarded as a foundation of social development. Children who demonstrate more prosocial behavior often are more popular and well-liked (Chen et al. 2011), are more well-adjusted (Clark and Ladd 2000) and have more positive relationships with peers (Spinrad et al. 2006). In a seminal paper, Eisenberg et al. (1994) theorized that empathetic over-arousal in situations involving negative affect results in an aversive emotional state, which can lead to a focus on one's own needs as opposed to addressing another individual's distress. Therefore, it is conceivable that those who can better regulate emotions and emotion-related behavior should be relatively more likely to experience sympathy rather than personal distress, and act in a prosocial manner (Eisenberg 2000). There have only been a few studies with older children that have looked at the relationship between self-regulatory behaviors and prosociality. In a sample of 6- to 8-year olds, adults' reports of children's behavioral regulation were positively related to teachers' and children's reports on sympathy (Murphy et al. 1999). Additionally, Scrimgeour et al. (2016) found that 4-year old children who showed a physiologically response consistent with more adaptive emotion regulation were rated as more prosocial. Therefore, there is evidence that links children's emotion regulation skills and prosocial behavior, but to our knowledge this has not yet been examined in early preschool-aged children, when prosocial behavior is itself still developing. Prosocial behavior undergoes major developmental change in the first few years of life. Instrumental helping, or aiding another in achieving an action-based goal (Liszkowski et al. 2006) develops before empathic helping, the ability to respond to others' emotional distress emerges later (Svetlova et al. 2010). Therefore, it is important to address how emergent emotion regulation relates to these separate facets of prosocial behavior that are developmentally distinct at first.

The transitional period between toddlerhood and preschool is a time of rapid onset of cognitive and socio-emotional skills, and a relatively neglected area in regards to emotion regulation development. Additional exploration of specific parental and environmental correlates of children's emergent emotion regulation and what these early regulatory capacities mean for developing social competence would further our understanding of early socialization

of emotions. The aims of the current study were (1) to examine the unique contributions of parental and family-level factors to children's emergent emotion regulation and (2) to examine the association between early emotion regulation skills and children's social competence with an emphasis on both problem behaviors and adaptive social functioning. We hypothesized that young children whose parents showed more sensitive parenting during a laboratory-based interaction and had more adaptive self-reported emotion regulation skills would have better emotion regulation skills, reported by the parent. We further hypothesized that higher SES and lower levels of household chaos (both self-report) would be related to better emotion regulation in children. Finally, we expected that children with better emergent emotion regulation skills would have lower levels of behavioral and emotional problems (as reported by the parent), and show more instrumental and empathic helping in a behavioral task.

Methods

Participants

The sample included 90 children (44 female) aged 3.5 years old ($M = 3.54$ years, $SD = 0.13$ years) and their primary caregiver (81 mothers, 9 fathers). Participants were from the greater Boston metropolitan area, recruited from a department-maintained database of families who had expressed interest in participating in research, from online advertising, and from community recruitment events. Participating children were 59.3% White non-Hispanic, 7.7% African American, 9.9% Asian, 6.6% multiracial, and 16.5% were Hispanic. All children were full term singletons who had no known auditory, visual, neurological, or developmental disorders. Our sample included a wide range of socioeconomic statuses with the top 25% of our participants making over \$150,000 and the bottom 24% qualifying for public assistance based on income (see Table 1 for demographics). A post hoc power analysis conducted using G*Power Version 3.1.9.2 (Faul et al. 2007) indicated that our sample size of 90 yielded 87% power for detecting a medium sized effect ($f^2 = 0.15$) when employing the traditional criterion $\alpha = 0.05$.

Procedure

This study, entitled, Stress Hormone Influences on Early Learning and Development, was approved by the Boston University Institutional Review Board, protocol 3620E. Upon arrival, the primary caregiver provided informed consent. Children completed behavioral tasks while parents filled out questionnaires. Finally, parent-child dyads participated in a 12-min interaction that included a 5-min free

Table 1 Demographic information

Child age (years)	
M (SD)	3.54 (0.13)
Child ethnicity	
White non-Hispanic	59.3%
African American	7.7%
Asian	9.9%
Hispanic	16.5%
Multiracial	6.6%
Parent education	
% with at least a 4 year college degree	82.4%
Annual Income	
% Household income over \$60,000	67.8%

play, 5-min structured play with a challenging wooden puzzle (Hammond et al. 2012), and 2-min clean-up. Specifically, parents were instructed “play with your child as you normally would,” with a selection of toys provided. After 5 min, the experimenter entered with the puzzle with the instruction to “work on the puzzle together.” Parents were informed that when they heard a knock on the door it was time to clean up. The protocol included cognitive assessments and hair cortisol collection to address other research questions beyond the scope of the current analyses, which were designed to focus on the relation of child emotion regulation to sociocontextual factors and emerging social competence.

Measures

Parental factors

Parent emotion regulation The Emotion Regulation Questionnaire (ERQ; Gross and John 2003) is a 10-item questionnaire on which parents reported on their perception of their own habitual use of two widely established emotion regulation strategies, cognitive reappraisal and expressive suppression. Each item is rated on a 7-point Likert scale that indicates how strongly the statement applies from 1 (strongly disagree) to 7 (strongly agree). The cognitive reappraisal items include “When I want to feel more positive emotion, I change the way I’m thinking about the situation” while the expressive suppression items include “I control my emotions by not expressing them.” Higher scores on each scale indicate greater use of each emotion regulation strategy. Cognitive reappraisal and expressive suppression were statistically independent and therefore examined separately.

Parental sensitivity Video records of parent-child interactions were coded globally using the sensitivity subscale from

the Emotional Availability (EA) Scales (Pipp-Siegel and Biringen 2000). As described above, the parent-child interactions included free play, a challenging puzzle, and clean-up, to elicit parental behavior across a range of situations. The sensitivity subscale is a 7-point scale that captures the parent’s ability to read the child’s cues so that responses to child behaviors are considered and sensitivity is interpreted in relation to the child. This includes clear, accurate perceptions of emotions, responsiveness, ability to handle conflictual situations and awareness of timing (Biringen and Easterbrooks 2012). Higher scores indicate optimal sensitivity while lower scores reflect emotional detachment. Two certified coders who completed the EA training program coded 20% of the same sample. Intraclass correlation coefficients (ICC) were calculated to assess interrater reliability. The ICC for parental sensitivity was 0.81.

Household factors

Income-to-needs ratio (ITN) Parents reported their annual household income and the number of family members currently living in the household. To calculate ITN, we divided total family income by the federal poverty threshold based on the number of household members. Three cases were statistical outliers and therefore winsorized to within 3 SDs to restore normality of distribution.

Household chaos The short version of the Confusion, Hubbub, and Order Scale (CHAOS; Matheny et al. 1995) is a widely-used 6-item parent report assessing the level of chaos in the home environment. Parents respond on a 5-point Likert scale that indicates the degree to which each description applies to their home from 1 (definitely untrue) to 5 (definitely true). For example, “You can’t hear yourself think in our home.” Half of the items are reverse scored and all 6 items are averaged to create an overall household chaos score. Higher scores indicate greater household chaos ($\alpha = 0.50$).

Child emotion regulation

Emotion regulation checklist (ERC) The ERC (Shields and Cicchetti 1997) is a 24-item parent report that assesses parents’ perception of their children’s emotion regulation. The ERC has been validated for preschool children (Cohen and Mendez 2009; Graziano et al. 2007; Izard et al. 2008). Each item is rated on a 4-point Likert scale that indicates the frequency of emotion related behaviors from 1 (never) to 4 (always). The emotion regulation subscale includes 8 items that refer to children’s ability to modulate emotional arousal, and includes items such as “displays appropriate negative affect in response to hostile, aggressive, or intrusive acts by peers” or “can say when s/he is feeling angry.” Negatively-weighted items were reverse-scored and

averaged for a total score, where higher scores indicated better emotion regulation ($\alpha = 0.70$).

Child social competence

Prosocial behavior Three laboratory tasks assessed children's ability to instrumentally or empathically help others. The following tasks are based on the methods in Svetlova et al. (2010) and variations of these tasks were validated with children 2- to 4-years old (Dunfield and Kuhlmeier 2013).

All tasks were administered in the same sequence for all participants: first the wrapping task, then the clipping task, and finally the toy task. For the tasks to appear more natural and believable to the child, they were interspersed between cognitive assessments not included in the current analyses. In the wrapping task, an experimenter showed her blanket to the child reminding the child that it made her warm. The experimenter suddenly acted cold with a distressed expression on her face. In the clipping task, a hairclip was placed near the child by a research assistant, then the experimenter came in with her hair in her eyes and acted frustrated as she tried to unsuccessfully move her messy hair away from her face. In the toy task, an experimenter showed her teddy bear to the child, letting the child know that it made her happy. A research assistant entered and whispered to the experimenter, who immediately acted sad and upset. Both the wrapping and clipping task reflected instrumental helping while the toy task measured children's ability to alleviate emotional distress.

The experimenter provided up to eight progressively more explicit cues about her need or emotion and what the child could do to help her. Each cue was presented for 5 s. Once the child handed the target object to the experimenter, she stopped providing cues, and the child's score was based on how many cues were presented before she retrieved the object. When the child did not retrieve the object after all eight cues, they received a score of zero for that task. Behavior was coded from video records by two assistants who were blind to the study's hypotheses. Reliability was calculated for each coder with a primary coder for 20% of the video recordings. ICC was calculated to assess interrater reliability for the three tasks: wrapping (ICC = 1.00); clipping (ICC = 0.99); toy (ICC = 1.00). Higher scores indicate better ability to infer other's emotional or instrumental needs. Both the wrapping and clipping tasks were positively correlated, $r(69) = 0.53$, $p < 0.001$ and thus averaged to form an overall instrumental helping composite, while the toy task indicated empathic helping.

Behavioral and emotional problems The *Early-Years Strengths and Difficulties Questionnaire* (SDQ; Goodman 1997) is a 25-item parent report assessing psychological adjustment validated for children 2–4 years of age. Parents respond on a 3-point scale (not true, somewhat true, certainly

true) indicating the degree to which each attribute applies to their child. For example, "Often loses temper" or "Easily distracted, concentration wanders." Current analyses used the total difficulties score, which is the sum of four subscales: emotion symptoms, conduct problems, hyperactivity-inattention, and peer problems. Higher scores indicate more behavioral and emotional problems ($\alpha = 0.72$).

Data Analysis Plan

In preliminary analyses, to control for possible effects of child and parent gender, we tested associations with child emotion regulation using independent samples t-tests. If there were any significant gender differences in the outcome of interest, child emotion regulation, parent or child gender would be included as a covariate in further analyses.

In the main analyses, we first tested the relationship of parent and household factors to children's emotion regulation using Pearson correlations. Next, to examine unique contributions to children's emotion regulation, any variables significantly correlated with children's emotion regulation were entered in a stepwise regression with children's emotion regulation as the dependent variable. Finally, to examine the association between children's emotion regulation and children's social competence, we used Pearson correlations to test children's emotion regulation with prosocial behavior (instrumental and empathic helping tasks) and children's behavioral and emotional problems (SDQ Total Difficulties scale). To determine unique contributions of children's emotion regulation to social competence, significant associations were further explored by regressing each social competence variable on child emotion regulation and household factors.

For each analysis, all participants who had usable data for all variables in that analysis were included, to maximize statistical power and the representativeness of the sample. As is common in developmental research, not every participant had every variable, although the vast majority of participants were included in each analysis. Of the 90 participants, at least 86 were included in each of the analyses that relied on parent-reported variables, with missing data points because a few parents did not complete all questionnaires due to time constraints. Analyses involving the prosocial tasks included 80 out of 90 participants. The missing data was due to technical errors in video recording.

Results

Preliminary Analyses

Children's emotion regulation, the outcome of interest, did not vary by child or parent gender; therefore, neither child

nor parent gender was included as a covariate in further analyses. For descriptive statistics for all study variables see Table 2.

Parental and Household Factors in Relation to Child Emotion Regulation

Correlations of all variables of interest are shown in Table 3. Higher levels of parents’ self-reported cognitive reappraisal ($r(89) = 0.33, p = 0.001$) and lower levels of parent self-reported expressive suppression ($r(86) = -0.22, p = 0.04$) related to better child emotion regulation skills. Parental sensitivity was not related to child emotion regulation. Additionally, higher ITN ($r(89) = 0.25, p = 0.02$) and lower levels of household chaos ($r(89) = -0.30, p = 0.004$) related to better child emotion regulation skills. Next, child emotion regulation was regressed stepwise on parent cognitive reappraisal, parent expressive suppression, ITN and household chaos to assess unique contributions of these variables. The overall model was significant, $F(3, 86) = 7.09, p < 0.001$, and explained 20.4% of the variance in

child emotion regulation skills. Parent cognitive reappraisal, ITN and household chaos each uniquely related to child emotion regulation, demonstrating that higher levels of parent’s own emotion regulation abilities, higher ITN and lower levels of household chaos related to more effective emotion regulation skills in children (see Table 4).

Child Emotion Regulation and Social Competence

Child emotion regulation was related to children’s instrumental helping behavior, $r(80) = 0.23, p = 0.04$ (Fig. 1), and child behavioral and emotional problems, $r(90) = -0.46, p < 0.001$ (Fig. 2), but not with child empathic helping. To determine the specificity of these associations, instrumental helping behavior was regressed on child emotion regulation, ITN, and household chaos. Child emotion regulation uniquely predicted instrumental helping behavior, $\beta = 0.29, p = 0.02$, with household chaos a non-significant trend. When child behavioral and emotional problems was regressed on child emotion regulation, ITN, and household chaos, child emotion regulation uniquely predicted behavioral and emotional problems, $\beta = -0.36, p < 0.001$. Household chaos similarly contributed to child behavioral and emotional problems as a non-significant trend. Results demonstrate that children with better emotion regulation demonstrated more instrumental helping behaviors toward an experimenter and were reported to have fewer behavioral and emotional difficulties, even after controlling for household factors.

Table 2 Descriptive statistics for study variables

Variable name (possible range)	M (SD)	Min	Max	N
Parent cognitive reappraisal (1.00–7.00)	5.05 (1.01)	2.83	7.00	89
Parental expressive suppression (1.00–7.00)	3.19 (1.16)	1.00	6.50	89
Parental sensitivity (1.00–7.00)	5.46 (1.14)	3.00	7.00	91
Income-to-needs ratio	4.74 (3.57)	0.16	15.94	90
Household chaos (1.00–5.00)	2.04 (0.57)	1.00	3.67	91
Child emotion regulation (1.00–4.00)	3.25 (0.40)	2.13	4.00	90
Instrumental helping (0.00–8.00)	5.31 (2.02)	0.00	8.00	81
Empathic helping (0.00–8.00)	3.96 (2.04)	0.00	8.00	73
Behavioral and emotional problems (0.00–40.00)	7.77 (4.19)	1.00	20.00	90

Discussion

We examined emergent child emotion regulation in relation to parental and family-level sociocontextual factors, as well as the association of emergent child emotion regulation with developing social competence. Three-year-old children who

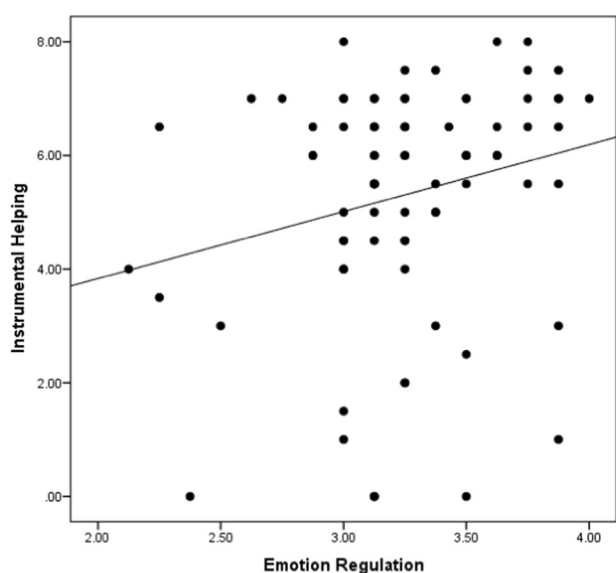
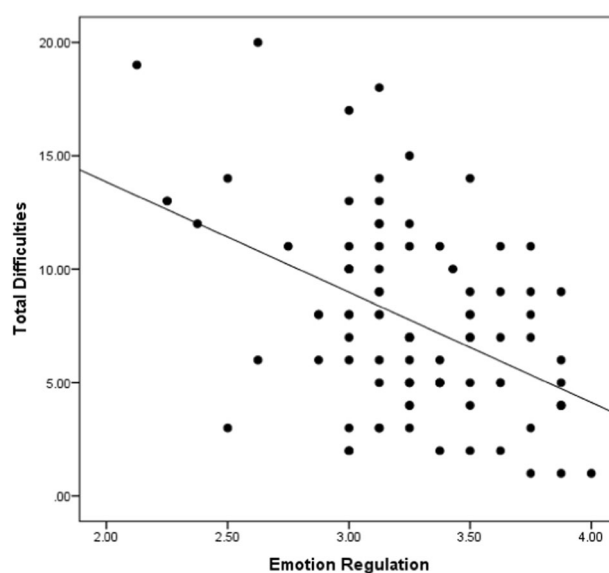
Table 3 Bivariate correlations amongst measures

	1	2	3	4	5	6	7	8	9
1. Parent cognitive reappraisal	–	–0.11	0.14	0.16	–0.33**	0.33**	0.14	0.15	–0.42**
2. Parent expressive suppression		–	–0.02	–0.08	–0.001	–0.22*	–0.24*	–0.21	0.23*
3. Parental sensitivity			–	0.18	–0.09	0.08	0.11	0.10	–0.02
4. Income-to-needs ratio				–	–0.09	0.26*	0.05	–0.04	–0.18
5. Household chaos					–	–0.30**	0.15	0.02	0.29**
6. Child emotion regulation						–	0.23*	0.11	–0.46**
7. Child instrumental helping							–	0.65	–0.05
8. Child empathic helping								–	–0.04
9. Child behavioral & emotional problems									–

* $p < 0.05$; ** $p < 0.01$

Table 4 Summary of linear stepwise regression analysis of child emotion regulation

Variable	<i>B</i>	SE	β	Adjusted <i>R</i> ²	<i>F</i>	ΔR^2
Step 1				0.10	10.14**	0.11
Constant	2.61	0.21				
Parent cognitive reappraisal	0.13	0.04	0.33*			
Step 2				0.14	7.97**	0.05
Constant	2.57	0.20				
Parent cognitive reappraisal	0.11	0.04	0.29**			
Income-to-needs ratio	0.03	0.01	0.23*			
Step 3				0.18	7.09**	0.04
Constant	3.03	0.29				
Parent cognitive reappraisal	0.08	0.04	0.21*			
Income-to-needs ratio	0.03	0.01	0.23*			
Household chaos	−0.15	0.07	−0.22*			

* $p < 0.05$; ** $p < 0.01$ **Fig. 1** Scatterplot depicting the positive correlation between parent-report child emotion regulation and the child's instrumental helping behavior on laboratory tasks. Children with better emotion regulation engaged in more instrumental helping**Fig. 2** Scatterplot of the negative correlation between parent-reported child emotion regulation and child behavioral and emotional problems, as indexed by SDQ Total Difficulties score. Children with better emotion regulation had fewer behavioral and emotional problems

were being raised in higher income, less chaotic households and whose caregivers used more cognitive reappraisal strategies when managing their own emotions, had better emotion regulation skills. Further, we found that even at this early stage in the development course of emotion regulation, better emotion regulation skills were already intertwined with child social competence, relating to fewer parent-reported emotional and behavioral problems and more instrumental helping behavior. Findings expand to the existing work that identify early markers of emotion regulation during a transitional period when emotion regulation skills first begin to emerge. Findings suggest the importance of fostering these parental and family-level factors early in development to help promote emotion regulation skills in

the critical years prior to the transition to kindergarten. Results support the value in targeting emergent emotion regulation to better understand how this critical skill contributes to the foundations of social competence.

We found that when parents endorsed greater use of cognitive reappraisal, an adaptive emotion regulation strategy, and less use of expressive suppression, a maladaptive strategy, their children had better emotion regulation skills. While a handful of studies with older children have identified a link between maternal mental health and child maladaptive emotion regulation strategies (Garber et al. 1991; Silk et al. 2006), it was unknown how parents' specific emotion regulation strategy use would relate to young preschool children's emotion regulation skills. Our results

suggest that how parents utilize two empirically supported emotion regulation strategies, cognitive reappraisal and expressive suppression, plays a role in how well their three-year-old children are able to regulate their own emotions. Further, parental use of cognitive reappraisal uniquely contributed to children's emotion regulation skills over and above parental expressive suppression, suggesting that parental cognitive reappraisal may be particularly beneficial for children's emotion regulatory capacities. This finding is consistent with literature linking positive outcomes with the use of cognitive reappraisal. Individuals who use more reappraisal strategies experience more positive emotions, are able to better modify their emotional expressions, and are more likely to share their emotions, both positive and negative, with others (Gross and John 2003). Speculatively, parents who are better able to implement reappraisal strategies are not only likely to have better socioemotional functioning themselves, but may be better able to provide an atmosphere for their child where emotions and different ways to handle emotions are openly discussed. Interestingly, we did not find a relation between parental sensitivity and child emotion regulation in our sample. This suggests that at this early age, broad parenting characteristics may not explain the relation between parenting and emergent emotion regulation. While in our current sample, child emotion regulation was unrelated to global parent sensitivity, we did not assess this more specific domain of parent emotion talk.

Pathways from parent cognitive reappraisal to child emergent emotion regulation may also be mediated by parent modeling. There may be something specific about a parent's own active process of modifying emotions that contributes to early developing emotion regulatory capacities. For young children who are undergoing vast and rapid neurological and cognitive growth, it might be most effective for them at an early age to witness observable emotion regulation strategies like cognitive reappraisal. Therefore, children whose parents use more reappraisal strategies may be benefitting from exposure to their caregiver engaging in active emotion regulation. Morris et al. (2007) proposed that parents' frequency, intensity, and valence of their emotional expression may be the mechanisms through which children learn to model their parents' emotion regulation. Early exposure to varying ranges of emotions elicited in a socially appropriate manner might help a child to utilize adaptive ways of regulating their own emotions (Morris et al. 2007). Improving parental emotion regulation strategies could be an opportunity for intervention to promote children's emotion regulation skills. Given prior findings that parent emotion coaching can assist with child emotion regulation (Ellis et al. 2014; Morris et al. 2011), this is a promising avenue that may be beneficial to children's developing prosocial behavior as well. Another related topic for future research is how parents may socialize or model emotion expression and

regulation differently for girls and boys. It would be interesting to investigate whether the relationship between parent's own emotion regulation strategies and children's emotion regulation differs by gender.

In the current sample, SES and household chaos both uniquely contributed to emergent emotion regulation skills, such that children living in higher income, less chaotic households had better emotion regulation abilities. Our finding is consistent with others who have found associations between poverty and emotion regulation deficits in children ages four and above (Bandon et al. 2008; Brown and Ackerman 2011; Raver et al. 2013) as well as studies that highlight a relation between household chaos and self-regulation (Evans et al. 2013). Expanding on these studies, our results indicate that SES is related to developing emotion regulation capacities even earlier in childhood than previous research has found. Children exposed to higher levels of household chaos and disorganization in the home environment had poorer emotion regulation skills. This builds on prior findings suggesting that families struggling with economic insecurity, and experiencing high levels of disorganization, crowding and noise, are linked to poorer cognitive abilities (Vernon-Feagans et al. 2012). Only one prior study to our knowledge found that greater household disorganization was predictive of children's difficulty in accurately identifying emotions and ability to regulate sadness and fear (Raver et al. 2015). In the current study, we found an association between household chaos and the ability to regulate both positive and negative emotions. Although household chaos is commonly referred to as a form of poverty-related adversity, it is likely that some families with young children who are not economically strained, also experience high levels of disorganization in the home. Therefore, it is important to consider household climate factors separately from household income when identifying early correlates of emotion regulation especially since household chaos can offer an opportunity for intervention.

While most studies examining the behavioral correlates of emotion regulation abilities focus on problems and poor adjustment, our study also examined positive socioemotional indicators. First, we found that children with better emergent emotion regulation had fewer emotional and behavioral difficulties, which is consistent with established evidence in the field (Blair et al. 2004; Eisenberg et al. 2001). Additionally, we found that children with better emergent emotion regulation showed more instrumental helping behavior. Both these associations remained significant when controlling for SES and household chaos, indicating a specific contribution of emergent child emotion regulation to these aspects of socioemotional competence in early childhood. Although it is important to understand how early emotion regulation abilities can serve as a screener for problem behaviors, it is beneficial to consider how emergent

emotion regulation may also be a marker for adaptive social functioning. While one might expect to find associations between emotion regulation and social domains later in childhood, when emotion regulation skills are more established, we already find a link between positive social behaviors and emergent emotion regulation by age three. Assessing both positive and negative behavioral outcomes provides a more comprehensive lens on children's overall behavioral functioning in a similar way that assessing how children manage both positive and negative emotions are important when addressing their emotion regulation skills.

The link between emotion regulation skills and direct observations of prosocial behavior in this early childhood period when both of these capacities are first beginning to emerge is novel. This finding builds on a prior literature linking emotional expression and emotion regulation to related social indices, such as peer sociometrics and teacher ratings of social competence (Denham et al. 2003; Eisenberg et al. 1996). It is well documented that instrumental helping behavior has an earlier onset than empathic helping behavior (Liszkowski et al. 2006; Warneken and Tomasello 2007; Zahn-Waxler et al. 1992) due to different developmental processes. Instrumental helping derives from early-developing understanding of goals and goal-directed behaviors (Woodward 1998) while empathic helping is related to the development of objective self-awareness and is a function of children's understanding of others as psychological agents (Moore 2007). Therefore, it is not surprising that we only found a relation between emotion regulation skills and instrumental helping in this early preschool period. The empathic helping task involved the child having to first process their own emotional state elicited by the distress of the experimenter before being able to address the experimenters' emotional needs. This is more difficult than helping the experimenter achieve an action-based goal during the instrumental helping tasks that less likely elicited emotions from the child. It should be noted that the empathic helping task occurred later in the session, thus it is possible that performance on this task was impacted somewhat by testing fatigue. Prosocial behaviors are the foundation of social relationship and related to a host of positive outcomes (Chen et al. 2011; Eisenberg et al. 2005). Being able to identify emotion regulation abilities as an early marker for instrumental helping can support better understanding of how to promote children's social competency.

Taken together, our findings suggest that emergent emotion regulation in the early preschool period is sensitive to parent emotion regulation and sociocontextual risks, and that in turn, emergent emotion regulation is already linked to social competence. Difficulties in emotion regulation put children at risk for social and academic challenges. Our results suggest that these associations may start very early. Perhaps intervening to bolster the early foundations of

emotion regulation could enhance school readiness and prevent developmental cascades of peer difficulties, emerging psychopathology, and academic difficulties in preschool and the early elementary school years.

Limitations and Future Research Directions

While findings from our study contribute to the continually growing field on the development of emotion regulation, there are some limitations to our study. The CHAOS questionnaire short form used to assess household chaos had relatively low internal consistency and limited variability in our sample. Future research may benefit from using the full length CHAOS scale or alternative measures of household chaos. The ERC is a well-established instrument that has been widely used to measure emotion regulation skills in early preschool children (Chang et al. 2003; Cohen and Mendez 2009; Izard et al. 2008) and was related to behavioral measures of social competence in the current study. However, it had a somewhat restricted range in our sample, and it would be beneficial to include an observational measure of emotion regulation in addition to parental report to assess children's emotion regulatory capacities at a behavioral level. In general, there is a lack of methodological approaches in measuring young children's ability to manage both positive and negative emotions in the laboratory. Future studies should attempt to replicate current findings with older children's assessments of emotion regulation strategies in an attempt to understand how their self-perceptions of these constructs are related to other- (e.g., peer-, teacher-) rated or observed measures of emotion regulation. Additionally, the emotion regulation measure for children and adults measured slightly different aspects of emotion regulation. The ERC emotion regulation subscale measures the ability of the child to control their emotions while the ERQ assesses the use of two specific emotion regulation strategies. Future studies should consider measuring children's strategy use through an observational task to make it more comparable. Other factors that may also play a role in emergent emotion regulation and should be further explored are, the other parent's use of different emotion regulation strategies and language skills. It is conceivable that different caregivers will use different emotion regulation strategies in the context of parenting and that parental and child language ability may be related to how well emotions are communicated and managed.

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Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures followed in the current study were in accordance with the ethical standards of the Boston University Institutional Review Board.

Informed Consent Informed consent was obtained from all participants included in the study.

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