Relations Between Parent Emotion Coaching and Children's Emotionality: The Importance of Children's Cognitive and Emotional Self-Regulation

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ABSTRACT

Children's self-regulation has been found to be related to optimal developmental outcomes; however, researchers are still investigating how cognitive and emotional regulation work together to explain development of self-regulation. This study investigated how children's private speech interacted with emotion regulation, conceptualized as effortful control, to predict children's emotionality. I also examined how private speech and effortful control may be different strategies of self-regulation that more fully explain the relation of parental emotion coaching philosophy to children's emotionality.

Preschool-aged children (n = 156) and their primary caregivers participated in this study. Parental emotion coaching was observationally measured as encouraging of negative emotion when discussing a time when children were upset. Children's non-beneficial private speech was transcribed and coded during a cognitively-taxing task. Children's effortful control (attention shifting, attention focusing, and inhibitory control) and negative emotion (anger and sadness) were measured using parent-report on the Child Behavior Questionnaire (CBQ).

It was found that children's parent-reported effortful control significantly mediated the relation between parent's observed emotion coaching philosophy and children's reported negative emotionality. Parents who did more emotion coaching had children reported to have greater effortful control and in turn were reported as less emotionally negative. While parental emotion coaching did not predict children's non-beneficial private speech, children who used less of the non-beneficial private speech were reported as less emotionally negative. Lastly,

children's private speech and effortful control interacted to predict children's negative emotion. When children were low in effortful control they were high in negative emotion, regardless of how much non-beneficial private speech they used. However, children with higher levels of effortful control were reported as less negative when non-beneficial private speech was low.

This research supports the importance of considering both cognitive and emotional development together, because private speech and emotion regulation interacted to predict children's negative emotionality. In addition, parents who support and encourage negative emotions may aid children's effortful control. This research further supports the importance of children's use of private speech in the classroom because non-beneficial private speech may be an additional cue for teachers and caregivers to know that a child needs assistance.

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Introduction

Self-regulation is the ability to act independently according to societal norms by managing goal-directed behavior (Sokol & Müller, 2007), and without these skills, children may be at-risk for poorer academic achievement (Ursache, Blair, & Raver, 2012), less wealth, worse health, and engaging in criminal activity as adults (Moffitt et al., 2011). Children should learn to self-regulate from others, and one strategy that can help them internalize what they are taught is private speech, or speech that is directed to the self to help children guide their behavior (Winsler, 2009). Private speech is typically seen as supporting cognitive regulation because cognitive abilities have improved when children talked themselves through tasks (Winsler, Manfra, & Diaz, 2007). Theorists have often discussed how emotion and cognition are integrated and that research including both processes will better explain early adjustment; however, little empirical research has investigated the contributions of both emotional and cognitive processes in development (Calkins & Bell, 2010). Researchers agree that self-regulation involves many types of regulation, including affective and cognitive components (Sokol & Müller, 2007), but they typically explore either emotion regulation or cognitive regulation, even though both are likely involved in the same tasks. There is a need to research both the emotional and cognitive regulation processes together because this will allow for the integration of emotion and cognition to be better understood (Blair & Dennis, 2010; Sokol & Müller, 2007).

One way of bridging the divide between cognition and emotion is by investigating the intersection of private speech and emotion regulation. Emotion regulation is proposed to be embedded within the broader rubric of self-regulation (Blair, Calkins, & Kopp, 2010) and includes processes that are involved in controlling positive and negative emotional responses

(Grolnick, McMenamy, & Kurowski, 2006). Effortful control, which is the purposeful ability to start, stop, or change attention and behavior, plays a central role in children's regulation of their emotional expression (Eisenberg, Smith, & Spinrad, 2011); therefore, I investigated effortful control as a strategy for regulating emotion.

Understanding factors that are related to emotion expression in children is important because children with higher levels of emotionality have been found to be at risk for negative outcomes such as externalizing behaviors (Eisenberg et al., 2001; Gilliom, Shaw, Beck, Schonberg, & Luon, 2002) and poorer social skills and peer status (Eisenberg et al., 1993). While private speech and effortful control have been found to relate to children's emotionality (e.g., Broderick, 2001; Day & Smith, 2013; Gaertner, Spinrad, & Eisenberg, 2008; Gilliom et al., 2002), researchers have not investigated the two strategies within the same model, even though they are both part of children's self-regulatory system. One goal of the current study was to investigate how private speech and effortful control related to children's negative emotionality. Children who were better at both strategies of regulation, private speech and effortful control, were expected to display lower levels of negative emotionality. In contrast, if children used less of both regulation strategies, they were expected to display higher levels of negative emotionality.

A second goal of my research was to examine how young children learn to self-regulate through parental socialization. Parents with an emotion coaching philosophy believe that positive and negative emotions are valuable and that is it their responsibility to encourage and guide children's use of positive and negative emotions (Dunsmore, Booker, & Ollendick, 2013; Gottman, Katz, & Hooven, 1996, 1997). Since parental emotion coaching philosophy acknowledges the importance of seeing and experiencing both positive and negative emotions,

children with parents high in emotion coaching are likely to be better able to regulate themselves emotionally and thus display less extreme levels of negative emotion. Effortful control is an important measure of children's self-regulation (Eisenberg et al., 2011) but has not been investigated for how it relates to parental emotion coaching philosophy. Effortful control has been found to mediate relations of socialization to many behaviors reflecting social competence (Eisenberg, Chang, Ma, & Huang, 2009; Eisenberg, Zhou, et al., 2005; Hofer, Eisenberg, & Reiser, 2010; Kochanska & Knaack, 2003; Spinrad, Eisenberg, Gaertner, Popp, et al., 2007; Valiente, Lemery-Chalfant, & Reiser, 2007). The current study built upon this research by investigating whether effortful control mediated the relation of parental emotion coaching to children's emotionality.

The other pathway that was investigated was how children's beneficial private speech mediated the relation of parental emotion coaching philosophy to children's emotionality. Researchers have found that socialization related to children's private speech (Berk & Spuhl, 1995; Winsler, 1998; Winsler, Diaz, & Montero, 1997), and my earlier research found that private speech related to children's emotionality and emotion regulation (Day & Smith, 2013; Day & Smith, 2014). Children's private speech may be a key strategy in understanding how parental emotion coaching relates to children's emotionality because of how it is believed to aid in children's internalization, or the process by which communication between people is transferred within a person (Vygotsky, 1934/1986, 1978). Language is proposed to be important to young children's ability to self-regulate because language gives children the ability to describe how they feel and gives them a means to understand how their emotions and actions affect other people (Kopp, 1989); therefore, children who use more beneficial forms of private speech were expected to be better regulated emotionally and less emotionally negative. Language is also

believed to increase children's ability to use outside influences to aid in their ability to self-regulate (Thompson, 1990), so children's private speech may help them be more adept at learning from their parents' emotion coaching. In summary, children who used more beneficial forms of private speech were expected to be more adept at internalizing their parent's emotion coaching and displaying less negative emotionality.

My model is depicted in Figure 1. Preschool age children were the focus of this study because it is an important developmental period for self-regulation, including children's private speech and effortful control. Private speech has a typical developmental course, becoming more internalized over the childhood years (Berk & Winsler, 1995). Usage of private speech tends to have an inverted-U shape with an increase over the preschool years and a decline in the early elementary years, as it becomes internalized. Children are also becoming more capable of regulating their own behavior and are relying less on caregivers with age (Eisenberg & Morris, 2002). As children move through their preschool years, they become more capable of self-regulation, and emotion regulation becomes more of a partnership between parent and child with children slowly becoming more autonomous in their emotion regulatory abilities (Denham, 1998; Eisenberg et al., 2011). Furthermore, the integration of emotional and cognitive processes may be especially important to preschool-age children because their brains are still developing (Blair, 2002).

Because of the age range selected within the preschool developmental period (3-5 years of age, pre-kindergarten), my first research question investigated the developmental trajectory of the study variables. Children's age was not expected to relate to their parents' emotion coaching, because it has been found to not relate in previous research involving preschool-age participants (Katz & Windecker-Nelson, 2004; Laible, 2004; Perez Rivera & Dunsmore, 2011). In addition,

negative emotionality is typically not related to children's developmental abilities (Eisenberg, Fabes, Nyman, Bernzweig, & Pinuelas, 1994; Liebermann, Giesbrecht, & Müller, 2007; Portegal & Archer, 2004). However, older children were expected to have greater effortful control (Allan & Lonigan, 2011; Carlson & Wang, 2007; Kochanska & Knaack, 2003) and use more of the beneficial private speech (Al-Namlah et al., 2006; Al-Namlah et al., 2012; Berk & Spuhl, 1995). If child age was significantly related to the study variables, I included it as a control variable in subsequent analyses.

I included expressive language ability as a control variable in my analyses. Expressive language ability is important for this study because children who are better able to communicate verbally may use more private speech. I also examined child sex differences because research has found that girls have greater effortful control (Kochanska, Murray, & Harlan, 2000; Putnam, Gartstein, & Rothbart, 2006). If age, sex, or expressive language ability were significantly related to any of the study variables, I controlled for children's age and/or expressive language ability so I was investigating differences between the study variables and not allowing the variables to be confounded.

Theoretical Approaches

Bandura and Vygotsky both stress the importance of socialization. I used Vygotsky's views on learning and the zone of proximal development along with Bandura's modeling and reinforcement to explain why parental emotion coaching is important to children's emotionality and why private speech and effortful control would mediate the relation of emotion coaching to negative emotionality.

As discussed by Vygotsky (1934/1986, 1978), learning occurs before children ever enter school. Therefore, children's interactions with parents and others are important. Bandura's

discussions of modeling and reinforcement strengthen Vygotsky's view that learning occurs before children enter school because these discussions provide a method for this learning. Ideally, parents model behaviors they want their children to learn through observational learning (Bandura, 1977, 1986). *Observational learning* is when children learn from watching another person. Children cannot do everything themselves and must learn by watching others. For example, children do not have to be hit by a car to learn not to play in the street. They can learn this by watching others play in the street and seeing the other children get scolded or hurt. Reinforcement and punishment to the model may affect learning, but they are not necessary. *Reinforcement* (Bandura, 1977, 1986) is when something positive is given, such as praise, while *punishment* is when there is a negative consequence, such as being scolded. However, feedback from others when children recreate modeled behavior may also modify future responses. Reinforcement works more on modifying behaviors that children have already learned. By reinforcing a behavior, children are more likely to repeat the behavior. In contrast, behaviors that are not reinforced will often times disappear. Parents will hopefully interact positively with others so they can lead by example. Those with an emotion coaching philosophy will discuss their children's emotions with them and will allow their children to feel and display different emotions because they believe that it is okay for their children to experience positive and negative emotions. Parents will then reinforce their children's experiences rather than punish emotional displays. I believed this would lead to children who are more capable of regulating their own emotions later in life.

When parents socialize their children using Bandura's modeling and reinforcement, Vygotsky's (1934/1986, 1978) *zone of proximal development* affects how children will learn from their parents. Vygotsky would say that parents must try to stay within their children's zone

of proximal development, or their developmental level, when trying to teach certain behaviors. According to Vygotsky, there are two developmental levels, which are children's actual developmental level and their potential developmental level. Children's actual developmental level is what children know and can accomplish without any assistance. Children's potential developmental level is what children could know or could accomplish with the help of another person. More competent children or adults can help children learn more by aiding in their learning. The more competent person does so by using prompts, clues, modeling, etc. Wood, Bruner, and Ross (1976) built upon Vygotsky's idea of the zone of proximal development to come up with the term *scaffolding.* Scaffolding is when an adult controls elements of the task which are first beyond the learner's ability so the learner can concentrate on aspects that are within their range and the learner can achieve more through this assistance than if they attempted the task alone. These scaffolding behaviors may also help children internalize information. Vygotsky would say that parents should not have the same expectations of their infants and children because they inherently have different zones of proximal development. Therefore, parents with an emotion coaching philosophy would need to be aware of their children's zone of proximal development when trying to model and reinforce certain behaviors. However, there are weaknesses in both Bandura's and Vygotsky's theories.

One weakness of both Bandura's and Vygotsky's theories is that they do not take emotion or affect into consideration. However, emotional and cognitive development are closely related (Blair et al., 2010) and cannot be researched separately if we want to improve our understanding of parental socialization and children's self-regulation. My study added to Bandura's (1977, 1986) and Vygotsky's (1934/1986, 1978) theories by including a measure of

emotionality and effortful control in order to investigate how cognition and emotion work together.

My model also included children's private speech as a mediating variable. Vygotsky (1934/1986, 1978) believed that egocentric speech was a beneficial tool. Tools are provided by the culture and include language, counting systems, writing, maps, etc. These tools control thought and behavior. Language is the most important tool because it frees people from what they see in front of themselves and allows them to represent the unseen, past, and future. Private speech, or egocentric speech, is also a very important tool. Flavell (1966), as discussed by Winsler (2009), coined the term "private speech" which is now widely used and preferred to "egocentric speech". Vygotsky wrote that private speech first appeared to be only an accompaniment to activity and later used for planning purposes. Vygotsky believed it was the intermediate stage leading to inner speech or silent thinking and that it aids in the transfer of social behaviors internally. Therefore, private speech aids the movement of the interpersonal becoming the intrapersonal.

Another topic of Vygotsky's that is important to the current study is the idea of *internalization* (Vygotsky, 1934/1986, 1978). Children's interactions with adults and others are first between minds, or interpersonal, and then become internalized so they are within-mind, or intrapersonal. This means that thinking is social and reflects the culture. An example of this is a young child who desires a toy and begins to reach for it. After a while, an adult may notice this behavior and hand the toy to the child. After this happens a few times, the child will begin to realize that reaching and grasping is a way of communicating with others and internalize this experience. Private speech may aid in the internalization of skills parents model and teach their children. I proposed that children may use private speech to help them internalize their parents'

emotion coaching philosophy. Children's private speech may mediate the relations of parental emotion coaching philosophy to negative emotionality by giving children a way of rehearsing what they have learned from their parents' emotion coaching.

Another similarity in both theories (Bandura, 1977, 1986; Vygotsky, 1934/1986, 1978) is that both theorists stated the children are active participants and that children themselves matter. It is not solely parent socialization that is responsible for how children will develop, but there are also internal child factors. Many factors may affect children's learning, such as children's age, sex, and language ability. To measure child factors, I included children's age, sex, and expressive language ability in analyses.

In short, Vygotsky and Bandura both put forth theories that are complementary and can enhance each other. By integrating aspects of both theories, a new theoretical framework was created that helped guide my dissertation research. This framework supported the importance of parental socialization on children's emotionality. In addition, the framework supported my inclusion of children's private speech and effortful control as variables that mediate the relation of socialization to negative emotionality.

Background Literature

Self-regulation is the ability to act in a socially appropriate way by independently adjusting goal-directed behavior (Sokol & Müller, 2007). Researchers agree that self-regulation is important to children's development (e.g., Moffitt et al., 2011; Ursache et al., 2012), but some researchers take a more cognitive perspective of self-regulation (e.g., Patrick & Abravanel, 2000; Winsler, Ducenne, & Koury, 2011), whereas other researchers take a more emotional perspective (e.g., Cole, Dennis, Smith-Simon, & Cohen, 2008; Eisenberg, Spinrad, & Eggum, 2010; Spinrad, Stifter, Donelan-McCall, & Turner, 2004). While theorists and researchers agree that cognitive

and emotional development are integrated and that researchers must include cognitive and emotional aspects together in research (Blair et al., 2010; Blair & Dennis, 2010; Calkins & Bell, 2010; Sokol & Müller, 2007), few researchers have included both cognitive and emotional strategies of self-regulation. Therefore, one of the goals of this study was to include cognitive and emotional strategies of self-regulation by including private speech and effortful control.

Children's private speech should peak during the preschool years as children become more skilled at talking themselves through tasks and begin to self-regulate, rather than depending on external regulation, and then decrease as children become more capable of internal thought (Berk & Winsler, 1995). Children who are older are more likely to have the cognitive capacity to complete difficult tasks, so older children would be expected to use more beneficial private speech (Al-Namlah et al., 2006; Al-Namlah et al., 2012; Berk & Spuhl, 1995) and less non-beneficial private speech (Al-Namlah et al., 2006; Al-Namlah et al., 2012; Winsler et al., 1997). Private speech is believed to be related to self-regulation because young children were more likely to use private speech when they were in a situation that required them to regulate their actions than in free play situations (Winsler & Diaz, 1995). Furthermore, young children's overall cognitive abilities improved so that they were performing similarly to older children when they were asked to speak aloud during a coordination task (Winsler et al., 2007). This beneficial outcome may have been because they were better able to work through the task when they were given permission to externalize their thoughts using private speech. Private speech is an important self-regulation tool and has been encouraged in the classroom because of the cognitive regulatory function it provides (e.g., Winsler, Carlton, & Barry, 2000; Winsler, Diaz, Atencio, McCarthy, & Chabay, 2000; Winsler et al., 2007). Private speech is believed to help children work through cognitively-taxing tasks because using speech can help children focus on

the most important aspects of tasks, coordinate their behavior, move through tasks in an ordered fashion, and internalize what they have learned by repeating the information aloud. It was also proposed that private speech was a window to observe young children's self-regulation through children's thoughts, strategies, motivational processes, and emotions, so children's private speech was a self-regulation strategy (Winsler, Carlton, et al., 2000).

Emotion regulation includes the processes that are involved in controlling positive and negative emotional responses (Grolnick et al., 2006). Effortful control is the purposeful ability to start, stop, or change attention and behavior and has been found to play a central role in emotion regulation so that it is seen as a strategy of emotion regulation (e.g., Eisenberg et al., 2001; Eisenberg, Champion, & Ma, 2004; Spinrad, Eisenberg, Gaertner, 2007; Valiente et al., 2006). Two important indices of effortful control are attention regulation and behavioral regulation (Eisenberg et al., 2011). Attention regulation, or attention control, is the ability to shift and focus attention as needed, while behavioral regulation is the ability to inhibit behavior as needed. Greater effortful control has been found to be related to higher levels of emotion regulatory ability (e.g., Gilliom et al., 2002; Gaertner et al., 2008; Gerardi-Caulton, 2000). Children's effortful control has been found to develop over the preschool years so children's abilities increase as they grow older (Allan & Lonigan, 2011; Carlson & Wang, 2007; Kochanska & Knaack, 2003). Older children have greater cognitive and emotional abilities so that they should be able to be better able to control their attentional and behavioral regulation. Effortful control is believed to be a strategy of children's self-regulation by giving them a way to inhibit their behavior and distract themselves when they are required to act against their own wants and needs. Effortful control, and therefore emotion regulation, is another mechanism of self-regulation (e.g., Eisenberg et al., 2011; Kochanska et al., 2000).

Relations of Self-Regulation to Emotionality

Researchers have separately investigated how emotional and cognitive regulation relates to children's negative emotionality, but little research has investigated how emotional and cognitive regulation strategies interact to predict children's emotionality. There is also not a consensus on how negative emotionality relates to children's age over the preschool years. Some researchers have found that older children are less emotionally negative (Carlson & Wang, 2007), while others found that there is no relation (Eisenberg et al., 1994; Liebermann et al., 2007; Portegal & Archer, 2004), and some have found it to increase (Gaertner, Spinrad, & Eisenberg, 2008). Since children's self-regulation includes both cognitive and emotional aspects (e.g., Sokol & Müller, 2007), researchers will not have a complete understanding of how children regulate their emotions until they take a more holistic perspective of regulatory abilities. The current study combined cognitive and emotional perspectives on children's self-regulation by investigating how children's cognitive abilities, such as private speech, relate to effortful control and emotionality.

Self-regulation has been found to relate to emotionality when self-regulation is measured by effortful control. Two common indices of effortful control are attentional control and behavioral control. Children who displayed greater attentional control by distracting their attention away from an upsetting stimulus have been found to have lower levels of anger (Buss & Goldsmith, 1998; Calkins, Gill, Johnson, & Smith, 1999; Calkins & Johnson, 1998; Day & Smith, 2013; Gilliom et al., 2002; Grolnick, Bridges, & Connell, 1996; Stifter & Braungart, 1995). One exception was that Diener and Manglesdorf (1999) found that directing attention away from an upsetting stimulus was not related to anger in contingency analyses. Effortful control has also been found to be related to less negative affect (Calkins, Dedmon, Gill, Lomax,

& Johnson, 2002; Eisenberg et al., 1993; Fabes et al., 1999; Gaertner et al., 2008; Gerardi-Caulton, 2000; Hanish et al., 2004). Therefore, in most cases, children who have greater effortful control typically have been found to display lower levels of negative emotion, indicating that effortful control is a strategy children use to self-regulate negative emotion. However, this research focused on how children's effortful control related to emotionality and did not take children's cognitive regulation into account. Without taking cognitive development into consideration, researchers are not understanding how children mentally appraise and work through emotionally-taxing situations. Research focused solely on emotional development fails to acknowledge children's thought processes, even though examination of their thinking, or cognitive processes, could provide valuable information about their regulation of emotion. I included cognitive development in my emotion regulation research by investigating children's private speech.

Typically, private speech is investigated with cognitive tasks to see how private speech relates to task performance (Berk, 1986; Berk & Spuhl, 1995; Bivens & Berk, 1990; Broderick, 2001; Fernyhough & Fradley, 2005; Manning, White, & Daugherty, 1994; Winsler, de Léon, Wallace, Carlton, & Willson-Quayle, 2003; Winsler, Diaz, et al., 2000; Winsler et al., 1997; Winsler et al., 2011). Private speech categories that have been found to be related to better task performance are perceived to be more beneficial while categories that are related to poorer task performance are assumed to be less beneficial. Children who displayed more inaudible muttering (whispering, speech that appears to be words but not understandable) and task-relevant private speech (related to task at hand) have been found to perform better on cognitive tasks (Berk, 1986; Berk & Spuhl, 1995; Bivens & Berk, 1990; Fernyhough & Fradley, 2005; Manning et al., 1994; Winsler et al., 2003; Winsler, Diaz, et al., 2000; Winsler et al., 1997; Winsler et al.,

2011). In addition, children who used more vocalizations (sounds that are not words), task-irrelevant private speech (unrelated to task), and negatively valenced task-relevant private speech (speech that inhibits or stops efforts) have been found to perform poorer on cognitive tasks (Berk & Spuhl, 1995; Broderick, 2001; Day & Smith, 2013; Manning et al., 1994; Winsler et al., 2003; Winsler et al., 1997; Winsler et al., 2011). Therefore, inaudible muttering and task-relevant private speech are considered beneficial because they related to better task performance, whereas vocalizations, task-irrelevant private speech, and negatively valenced task-relevant private speech are considered less beneficial.

The majority of private speech research has focused on cognitive development which limits our understanding of what private speech is and how it relates to children's development because even when children are working on cognitive tasks, emotions are likely involved. Cognitive tasks that are not typically expected to be frustrating may still elicit emotion. These tasks may be very difficult, causing fatigue, or boredom leading children to simply not want to complete them, and all of these situations likely have emotion associated with them. For example, if the cognitive tasks are difficult, this will likely lead to children to feel frustrated. Children's private speech may be a window into how children regulate their emotionality because they may voice their thoughts and feelings while completing a task. Because most private speech researchers are cognitively focused, they tend to ignore this perspective in their research.

Children who are well-regulated emotionally have been found to use more private speech and less emotionally negative private speech, such as, "I hate that", "I can't do it", "dummy dummy dummy" (Broderick, 2001). In addition, children's private speech has been found to be related directly to children's emotionality. More beneficial forms of private speech, such as

facilitative task-relevant private speech, were related to less negative emotionality (Day & Smith, 2013). Therefore, children's cognitive development, through private speech, has been found to be related to their emotional development, as measured by their emotionality. However, research investigating children's private speech and emotionality is limited, and the analyses did not take children's emotional development, as measured by effortful control, into consideration. The purpose of this study was to investigate how both emotional and cognitive regulation related to children's emotionality.

Private speech and effortful control are two strategies of self-regulation that focus on cognitive and emotional development. By incorporating both into one study and seeing how they interact to predict emotionality, a better understanding of children's development can be achieved. One goal of the current study was to investigate if children's private speech moderated the relation of children's effortful control to children's negative emotionality. Private speech is seen as the moderator because language has been proposed to help regulate actions and emotions, such as frustration (e.g., Cole, Armstrong, & Pemberton, 2010; Eisenberg, Sadovsky, & Spinrad, 2005; Kopp, 1989; Thompson, 1990). Therefore, children's private speech may be an additional regulatory tool during frustrating situations. Language also gives children a method of communication so they can share their needs with others and communicate with themselves (Kopp, 1989). During a frustrating task, children's cognitive and emotional capabilities are being taxed. For example, if children are asked to wait to receive a snack they will still be thinking about how much they want the snack or trying to distract themselves by thinking about something else. A better understanding of how effortful control relates to emotionality would be gained by including children's private speech because it can be a window to children's thoughts and feelings (Winsler, Carlton, et al., 2000). In addition, investigating

how private speech relates to effortful control was expected to better explain previous conflicting findings (e.g., Diener & Mangelsdorf, 1999). Therefore, I proposed that adding the interaction term to the proposed model (see Figure 1) would lead to improved model fit and that the negative association between effortful control and negative emotionality would be strongest for children who used more beneficial forms of private.

Socialization of Self-Regulation

Children's self-regulation, whether cognitive or emotional, is related to how they are socialized. Most societies assign parents the primary role of socialization (Grusec & Davidov, 2007), and through socialization children learn how to interact and work with others (Bugental & Goodnow, 1998). Children, especially young children, are largely dependent on their parents because parents provide food, protection, housing, and the different settings in which children develop (Maccoby & Martin, 1983). Parental socialization can occur through many different methods as parents interact with their children in multiple contexts and situations.

One method of socialization involves parents' emotion coaching philosophy, which includes encouragement of positive and negative emotions, the belief that positive and negative emotions are valuable, and the belief that it is parents' responsibility to guide their children's emotions (Dunsmore et al., 2013; Gottman et al., 1996, 1997; Katz & Gottman, 1997). Emotion coaching acknowledges that children must experience many different emotions throughout their lives and that no emotion is inappropriate. According to this philosophy, children should see and feel negative emotions, such as anger and sadness, because they are a part of life. Emotion coaching philosophy includes how parents react to their children's emotions and how they perceive their children's emotions. Emotion coaching incorporates cognitive and emotional aspects of socialization because it includes how parents think about their children's emotions

while it is still focused on children's emotional development. Parental emotion coaching was not expected to relate to children's age because relations have not been found in previous research with this age group (Katz & Windecker-Nelson, 2004; Laible, 2004; Perez Rivera & Dunsmore, 2011). The lack of age relations may be because how parents think about and talk about emotions does not vary dependent on whether their child is younger or older.

Research focusing on parental conversations with their children about emotions has found that talk about emotion is related to socioemotional development through greater behavioral internalization, greater emotion understanding, and more positive views of relationships (Laible, 2004; Laible & Song, 2006; Laible & Thompson, 2002). While many other measures of socialization are broad and focus on warmth and sensitivity (Eisenberg, Zhou, Liew, Champion, & Pidada, 2006; Gaertner et al., 2008; Gilliom et al., 2002; Kochanska & Knaack, 2003; Kochanska et al., 2000; Spinrad, Eisenberg, Gaertner, Popp, et al., 2007; Valiente et al., 2006; Valiente et al., 2007), emotion coaching includes language, how parents and children communicate, and whether parents are displaying and reinforcing emotional displays. Emotion coaching philosophy is better at measuring how parenting relates to children's self-regulation than previous measures that focus on warmth and sensitivity because it adds the cognitive components of how parents think about emotion, talk about emotion, and teach emotion knowledge. Parents can be warm and positive but still be oblivious to their own and children's emotions and believe that their children must be happy all the time and never feel any negative emotions (Gottman et al., 1997). However, if children are taught that they should not feel sadness or anger they will most likely be less able to cope with difficult situations later in life. Emotion coaching focuses not only on how parents interact with their children during

discussions of emotional events but also whether they teach their children about emotions by talking about causes and consequences of emotional events.

While parental emotion coaching has not been directly related to observed negative emotionality, parental emotion coaching has been found to relate to parent- and teacher-reported negative emotionality (Gottman et al., 1997). In structural equation models, Gottman et al. (1997) reported unexpected findings. Parents' awareness of emotions was related to higher levels of reported negative emotionality. However, they did not include regulation as a mediator of the relation of awareness of emotions to negative emotionality. The current study sought to clear up these contradictory findings by investigating regulation as a mediator of the relation from emotion coaching philosophy to children's negative emotionality and by using a composite parental emotion coaching variable that includes both parents' awareness of their children's and their own emotions and actual emotion coaching. As Gottman et al. (1997) discussed, parents who are aware of their children's emotions but do not actually coach may not be as beneficial to children as parents who are both aware of their children's emotions and coach their children's emotions. In comparison to the methods in Gottman et al. (1997), I expected that including an observed measure of emotion coaching philosophy along with a questionnaire rather than solely interviewing parents could help clear up these contradictory findings.

Parental emotion coaching was expected to be related to children's emotionality because children can learn from their interactions with parents that positive and negative emotions are valuable and that it is acceptable to feel both positive and negative emotions. Researchers (Dunsmore et al., 2013; Gottman et al., 1996, 1997; Ramsden & Hubbard, 2002) have found that parents who did more emotion coaching had children who were better able to emotionally regulate, so these children were expected to display less extreme levels of observed emotion.

Parental emotion coaching was expected to be related to greater cognitive regulation along with greater emotion regulation which would relate to less observed negative emotion. To have a more complete understanding of how parental emotion coaching relates to regulation, both aspects of regulation must be included (Sokol & Müller, 2007).

Socialization of private speech tends to focus on overall parenting style and ways to support cognitive development. Experimenter and maternal scaffolding during tasks have been found to be related to more beneficial forms of private speech and task success (Berk & Spuhl, 1995; Winsler, 1998; Winsler et al., 1997). For example, Winsler et al. (1997) found that successful experimenter scaffolding after children completed an item incorrectly was related to more task-relevant private speech (speech related to the task) and subsequent item success. In addition, authoritative parenting style, characterized by high control and high acceptance, was found to relate to more beneficial forms of private speech and better task performance while authoritarian parenting, characterized by high control and low acceptance, was related to less beneficial forms of private speech and poorer performance (Berk & Spuhl, 1995). Researchers (Bugental & Goodnow, 1998; Eisenberg, 1996; Gottman et al., 1996, 1997; Grusec & Davidov, 2010) have included scaffolding and parenting style as measures of or related to socialization.

Parental emotion coaching can be seen as similar to scaffolding because both measures of socialization are child-centered and are focused on teaching through steps. When parents are performing scaffolding with their children, they are modifying the task at hand so that it is more easily completed by their children. To do this, parents must be focused on their children and their children's wants, needs, and perspectives. Emotion coaching is similar because parents who practice emotion coaching must listen to and be aware of their children's point of view about events and emotions. These parents care about their children's positive and negative

emotions and want to discuss the causes and consequences on their children's emotions. Through scaffolding, parents may simplify the task, only bring up one step at a time, and adjust how much they intervene according to their children's needs. Emotion coaching is similar because parents do not need to always re-iterate the importance of emotions or fully explain causes and consequences, but tell children what they are able to understand and what they need to know based on their children's abilities and needs. Therefore, because scaffolding is related to children's private speech, parental emotion coaching was expected to be related to children's private speech because of its similarity to scaffolding.

As discussed earlier, parenting style can be considered another broad measure of socialization. Parenting style does not directly address the importance of emotions in daily life along with how parents feel and teach about emotions. Some parents who are authoritative and are accepting of their children may also be trying to shield their children from negative emotions and not focusing on talking through emotional situations with their children. In contrast, scaffolding is too specific of a measure. When parents scaffold during a task, it is specific to the task at hand. While children may be able to achieve more when completing a task when they receive scaffolding, what they learn may not transfer to different tasks. Emotion coaching philosophy added to parenting style by including a focus on how emotions are important to daily life, and it broadened scaffolding to include how parents interact with their children and feel about their own and their children's emotions.

Parental emotion coaching is an important addition to the private speech literature because it includes how parents communicate with their children about emotions. Preschool children are believed to internalize conversations with their parents (e.g., Laible & Song, 2006) and can learn from these conversations how to handle stressful events. Children with parents

who have an emotion coaching philosophy will hear from their parents that positive and negative emotions are valuable and learn about causes and consequences of emotions. It was expected that children would have more beneficial private speech when their parents displayed and reported an emotion coaching philosophy because they learned from their parents how to handle their emotions and were better able to regulate their emotions during tasks that are frustrating and cognitively-taxing.

There is a large amount of research that has investigated relations between parental socialization and children's effortful control. Parenting style has been found to be related to children's effortful control with authoritative parenting related to higher effortful control and authoritarian parenting related to lower effortful control (Eisenberg et al., 2009; Xu, Farver, & Zhang, 2009; Zhou, Eisenberg, Wang, & Reiser, 2004). Higher effortful control has also been related to more specific parenting styles such as less power assertion and more praise, emotion-related socializing behaviors, expressivity, responsivity, sensitivity, warmth, responsiveness, and positive expressivity (Eisenberg et al., 2006; Gaertner et al., 2008; Gilliom et al., 2002; Kochanska & Knaack, 2003; Kochanska et al., 2000; Spinrad, Eisenberg, Gaertner, Popp, et al., 2007; Valiente et al., 2006; Valiente et al., 2007).

Focusing on broad measures of socialization such as warmth and positivity do not include any aspects of teaching. Parents cannot be warm and positive in every situation, and they must also teach children about emotions along with displaying proper behavior. Parental emotion coaching is a better measure of socialization for understanding children's effortful control because it includes how parents feel about their children's emotions, how parents talk with their children about language, and whether parents accept positive and negative emotional displays. Parents who uphold an emotion coaching philosophy talk to their children about their emotions,

the causes and consequences of the emotions, and how to handle their emotions. Children of parents who have an emotion coaching philosophy were expected to have a greater understanding of their emotions which meant they would be better able to regulate their attention and behavioral and therefore would have had greater effortful control abilities.

Emotion coaching has also been found to relate to measures similar to children's effortful control as measured by attentional control during a Strooplike task (Gottman et al., 1997). Gottman et al. (1997) found that mothers' awareness of their own and their children's sadness was related to greater attentional control during an IQ test. However, the researchers had contradictory findings in that they did not find that emotion coaching and other variables of awareness of emotions related to attentional control. This may be a result of how emotion coaching philosophy was measured through interview only. I included an observed measure of emotion coaching and standardized questionnaires. I also used both parent-report and observed measures so that I would have a more objective measure of emotion coaching than an interview because I included an observed measure of emotion coaching.

Emotion regulation has been hypothesized to mediate relations between parental socialization and child outcomes (Eisenberg, Cumberland, & Spinrad, 1998; Gottman et al., 1997). It is proposed that parents who are warm and positive have children who are better regulated and therefore display less anger and frustration. Parents who have an emotion coaching philosophy encourage positive and negative emotions, but that does not mean children should display high levels of emotion at all times. It is children's regulatory abilities that allow them to display emotion appropriately depending on the social context. While researchers have found that emotion coaching philosophy related to negative emotionality (Gottman et al., 1996),

the direction of the findings were conflicting. The specific mechanism of how emotion coaching philosophy relates to children's negative emotionality may be through self-regulation.

Effortful control has been found to mediate the relations of socialization to behaviors reflecting children's social competence (Eisenberg et al., 2009; Eisenberg, Zhou, et al., 2005; Hofer et al., 2010; Kochanska & Knaack, 2003; Spinrad, Eisenberg, Gaertner, Popp et al., 2007; Valiente et al., 2006). To test the relation between socialization and measures of social competence, these researchers investigated the mechanism of effortful control. For example, Eisenberg, Zhou, et al. (2005) found that observed parental warmth/positive expressivity when children were in elementary school predicted children's greater effortful control two years later, which in turn predicted lower levels of externalizing behaviors when the children were adolescents. However, this research used broad measures of parenting such as sensitivity and positive emotionality. Parental emotion coaching improves upon previous measures of socialization by including cognitive and emotional aspects of socialization. What is important to self-regulation, and therefore emotionality, is not simply warm and positive parenting but teaching children how to manage their behavior through regulation. However, effortful control research focuses on emotion regulatory abilities. To fully understand how parental emotion coaching relates to children's negative emotionality, a measure of children's cognitive regulation needs to be included.

Private speech was expected to be an additional regulatory ability that would mediate the relations between parental socialization and child outcomes, as emotion regulation is hypothesized to do (Eisenberg et al., 1998; Gottman et al., 1997). Because cognition and emotion are believed to be linked, measures of both types of regulation were included in the proposed model. Young children were expected to use private speech as an additional regulatory

mechanism to self-sooth, focus their attention, and regulate their own emotion and these behaviors were expected to be shaped by parents (Gottman et al., 1997). In turn, these children who experienced parental emotion coaching and were better regulated emotionally and cognitively were expected to display lower levels of negative emotionality. The current study investigated how private speech mediated the relation of parental emotion coaching philosophy to children's emotionality because private speech may aid children's internalization of parental emotion coaching philosophy. It was expected that children who used more beneficial forms of private speech would be better able to internalize their parents' emotion coaching philosophy and would display less negative emotionality.

The current study further built upon previous parental socialization and children's self-regulation research by including both parental report and observational measures of parental emotion coaching, children's effortful control, and children's negative emotionality. Questionnaires measure parental values and perceptions in broad contexts while observational measures reflect parents' and children's behavior in specific-situations and behaviors parents may not be aware of performing. Combining observations and parental report was expected to strengthen the previous research because parental beliefs and their observed behavior can differ (Bornstein, Cote, & Venuti, 2001; Karreman, van Tuijl, van Aken, & Dekovic, 2006; Rothbart & Bates, 1998).

Research Questions and Hypotheses

Research questions. The preschool age is a time of great growth and development. Because of this large age range, children's age was expected to be related to the study variables. This lead to my first research question:

RQ1: Does children's age relate to parental emotion coaching philosophy or their private speech, effortful control, or negative emotionality?

Children's beneficial private speech has been found to increase over the preschool years (Al-Namlah et al., 2006; Al-Namlah et al., 2012; Berk & Spuhl, 1995), while non-beneficial forms have been found to decrease (Al-Namlah et al., 2006; Al-Namlah et al., 2012; Winsler et al., 1997). In addition, older children have been found to have greater effortful control (Allan & Lonigan, 2011; Carlson & Wang, 2007; Kochanska & Knaack, 2003) and less negative emotionality (Carlson & Wang, 2007; Gaertner et al., 2008). However, previous research has found that child age during the preschool period is not related to the discussion of emotion (Katz & Windecker-Nelson, 2004; Laible, 2004; Perez Rivera & Dunsmore, 2011).

Researchers have found that parental emotion coaching philosophy was related to beneficial outcomes in children including children's ability to manage their emotions (Dunsmore et al., 2013; Gottman et al., 1996, 1997; Katz & Gottman, 1997; Ramsden & Hubbard, 2002). In addition, effortful control and beneficial forms of private speech have been found to relate to less emotionality (e.g., Buss & Goldsmith, 1998; Calkins et al., 1999; Day & Smith, 2013; Gaertner et al., 2008; Hanish et al., 2004). While effortful control has been found to mediate the relations of socialization to many behaviors reflecting social competence (Eisenberg et al., 2009; Eisenberg, Zhou, et al., 2005; Hofer et al., 2010; Kochanska & Knaack, 2003; Spinrad, Eisenberg, Gaertner, Popp et al., 2007; Valiente et al., 2006), this research did not address the role of emotion coaching. Private speech has only been found to be related to socialization (Berk & Spuhl, 1995; Winsler, 1998; Winsler et al., 1997) and emotion regulation (Broderick, 2001; Day & Smith, 2013; Day & Smith, 2014) in separate research. This leads to my second research question:

RQ2: Does children's self-regulation, measured by private speech and effortful control, mediate the relation of parental emotion coaching to children's negative emotionality?

While parental emotion coaching philosophy is related to beneficial outcomes (e.g., Gottman et al., 1996, 1997) and talking to children about emotions has been related to better socioemotional development (e.g., Laible, 2004; Laible & Song, 2006), it is less adaptive for children to display a large amount of negative emotion (e.g., Eisenberg et al., 2001; Eisenberg et al., 1993; Gilliom et al., 2002). Therefore, I expected children of parents who followed an emotion coaching philosophy to display less negative emotion. In addition, greater effortful control and beneficial forms of children's private speech were related to positive outcomes (e.g., Calkins et al., 1999; Winsler, Diaz, et al., 2000; Winsler et al., 2007). I expected that children's effortful control and beneficial private speech would mediate the relation of parental emotion coaching philosophy to negative emotionality. Children who displayed greater effortful control and used more of the beneficial forms of private speech, including inaudible muttering and task-relevant private speech, were expected to display less negative emotionality. Preschool children are going through a large amount of cognitive and emotional development; therefore, children's age was entered as a covariate in the model. Child sex was also included as a covariate in the model because mean differences have been found in children's effortful control (Eisenberg, Vidmar et al., 2010; Gagne, Miller, Goldsmith, 2013; Kochanska et al., 2000; Putnam et al., 2006) with girls having greater effortful control than boys. Children's expressive language ability was also included as a covariate because children with greater ability expressing themselves verbally may be more likely to use more private speech than children with less expressive verbal ability.

In summary, after controlling for child age, sex, and expressive language ability, I hypothesized that there would be two mediated pathways: (1) the relation of parental emotion coaching philosophy to children's negative emotionality would be mediated by children's beneficial private speech and (2) the relation of parental emotion coaching philosophy to children's negative emotionality would be mediated by effortful control. In other words, parents who used an emotion coaching philosophy were predicted to have children who used more beneficial private speech and had greater effortful control, which were then expected to predict less negative emotion.

Little research has empirically investigated how cognition and emotion relate to explain child development (Blair & Dennis, 2010; Sokol & Müller, 2007). My third research question was:

RQ3: Does children's beneficial private speech moderate the relation of children's effortful control to negative emotionality?

Private speech is believed to aid in the internalization of learning (Vygotsky, 1934/1986, 1978) and to be related to greater regulatory abilities (e.g., Winsler & Diaz, 1995; Winsler et al., 2007). Language and private speech are also proposed to help children regulate their attention, emotions, and behaviors (e.g., Cole et al., 2010; Gottman et al., 1997). Children's private speech was expected to aid their effortful control abilities to predict lower levels of negative emotionality. I hypothesized that children who used more beneficial forms of private speech would have better effortful control and therefore would display less negative emotionality. It was expected that adding the interaction term to the model proposed in research question 2 would lead to greater model fit.

Method

Participants

The sample size included 156 children recruited from the New River Valley area. The inclusion age criterion was children age 3 to 5 years, pre-kindergarten. Children ranged in age from 3.02 years to 5.79 years (M = 4.33 years, SD = 0.77). Close to equal numbers of boys (n = 79) and girls (n = 77) participated. The participants were largely white and not Hispanic or Latino. Children's ethnicity was 92% not Hispanic or Latino, 5% Hispanic or Latino, and 3% did not respond. For child race, 90% were white, 1% were Asian, 1% were Black or African American, and 8% were other. The demographics were similar to those of the New River Valley area: 85% white, 4% Black, 6% Asian, 2% two or more races, 0% American Indian or Alaskan Native, 0% Pacific Islander, and 3% Hispanic (Virginia Economic Development Partnership, 2011). The average family income was nearest to the range of $60,000 to $75,000 ($M$ = 5.45, where 1 = less than $15,000, 2 = $15,000-$30,000, 3 = $30,000-$45,000, 4 = $45,000-$65,000, 5 = $60,000-$75,000, 6 = $75,000-$100,000, 7 = over $100,000). For the marital status of the children's primary caregivers, 90% were married. For highest level of education completed by the primary caregiver, 48% completed a masters or doctoral degree, 39% graduated from a 4-year college, 12% completed some college or graduated from a 2-year degree, and 1% completed high school. Most of the children were accompanied to the laboratory visits by their mothers (n = 142, 91%); however fathers (n = 10, 6%), and other primary caregivers (e.g., grandparents, foster parents, n = 4, 3%) also participated. The sample did include families where two children participated (15 sibling pairs).

Recruitment methods included using the developmental sciences database utilized by Virginia Tech that contained information about families with young children in the area who

have participated in previous research projects and who showed interest in participating in more research. I also placed flyers and distributed hand-outs around local universities, Head Start programs, daycare centers, and other kid-oriented locations (e.g., playgrounds, children's gyms, women's centers, etc.). In addition, I attended parent meetings at the previously mentioned locations to talk to the parents about the study directly and advertised through electronic notices (e.g., VTnews, MacaroniKid). Parents were given a $10 giftcard to a local store as compensation, while children were given two toys to take home with them.

Procedures

Once primary caregivers expressed an interest in the study, they were contacted by phone or email, whichever they indicated as their preferred method of contact. The study was briefly explained to them and a visit to the Children's Emotions Lab at Virginia Tech was scheduled. One questionnaire was mailed to parents, who were asked to complete it at home and bring it with them for their visit.

Once at the lab, parents and children were greeted by two experimenters (E1 and E2) and brought into the playroom. Children sat on the floor with E2 and played with puzzles as a warm up activity and to keep them entertained when consent was obtained from the parents. The main experimenter (E1) reviewed the study with the parent and asked for their signed consent. E1 then handed the parent a clipboard with some questionnaires and a list of the tasks with instructions for the parent. Once the consent process was completed, E2 exited the room in order to operate filming equipment from outside the room. E1 then collected verbal assent from children by asking them if they are ready to play some games while E2 filmed the assent process.

The parent was in the room during the entire visit. During the initial introduction at the beginning of the assessment and again before each observational task, parents were quietly told

that if their children attempted to talk to them or asked for help to say that they cannot help because they are working on something and that they will help them when they have finished their work. The parent instruction sheet also included this request. Parents were asked to complete their questionnaires and magazines were provided for parents to read after the questionnaires were completed. The tasks were completed in a set order as presented below. Children also completed a standardized measure of children's emotion understanding that occurred before the last task, but this task was not used as part of this study.

Language measure. The first task was the Clinical Evaluation of Language Fundamentals Preschool - Second Edition (CELF Preschool - 2; Wiig, Secord, & Semel, 2004). Experimenters made sure that the Stimulus Book was visible to themselves and to the children. However, they kept the record form on a clipboard hidden from children because it contained the answers.

The recommendations given by the authors of the test were followed. These recommendations included not administering the subtests if children were unable to respond or did not appear to understand the task even after prompting, demonstrating, encouraging, and repeating. If children self-corrected, their revised responses were recorded by crossing out the original answer, circling the self-correct answer, and writing "SC" next to the response. When necessary, what children said was written on the record form. Discontinue rules indicated on the record form were followed. Experimenters only repeated item stimuli if the instructions allowed repetition. In addition, if children needed a short break during testing, the break was scheduled after a subtest, when possible. If it was not possible to break after a subtest, the experimenters re-administered the entire subtest when testing was resumed. Experimenters did not tell children

if their responses were right or wrong but would make general comments or reinforcing statements such as “I like the way you’re working” or “We’re almost done.”

Parent-child emotion coaching philosophy. The second task that the parent and child completed was the parent-child emotion talk task (Dunsmore et al., 2013), which was designed to prompt emotion-related discussion about family memories. At the beginning of the visit immediately after the consent process, the experimenter asked parents to think of an event that made their children happy and an event that made their children upset. Parents were asked not to pick a routine event, such as a birthday party, and were given suggestions of events, such as visiting grandparents or an outing to a sporting event or museum for a happy event and being separated from a parent or a disagreement with a friend for an upset event. Once the two events were decided, the experimenter wrote the events on separate notecards and the experimenter kept them. The order of events was counterbalanced. Before the task began, the experimenter gave parents the notecard and told them which event to start with. Parents were asked to start discussing the second event on the card once they heard a knock on the door. Parents were also instructed to feel free to discuss memories described by each other just as they would at home. Parents and children were given two minutes and thirty seconds to discuss each event.

Locked box. Next, children completed the locked box frustration task that was adapted from the PS Lab-TAB (Goldsmith et al., 1993). Before the task began, the experimenter quietly requested that the primary caregiver continue working on their questionnaires (or looking at magazines if they have finished their questionnaires). Parents were told that if their children tried to talk to them or ask for help to tell them that they can’t help right now because they are working on something and will help when they are finished. The parent was also told that the experimenter would return in a couple of minutes.

For this task, the experimenter brought into the room a transparent box, a lock, a ring of keys, and two sets of attractive toys (two cartoon characters and a prince and princess). After confirming children knew how to open a lock, children were asked which set of toys they liked best and wanted to play with. The chosen set of toys were put into the box, which was then closed and locked. The experimenter then told the children that they could use the keys to open the lock and play with the toys while she was gone; however, the correct key was not on the ring of keys given to the children. After leaving the children alone with the locked box and set of keys for four minutes, the experimenter returned with the correct key and apologized for not including it with the other keys. After opening the box, children were allowed to play with the toys chosen.

Selective attention. The next task the children completed was a cognitive selective attention task (Winsler et al., 2003). The materials consisted of two example big cards, 12 big cards, 16 smaller cards (answer cards) in a box, and a rack to hold the big. The experimenters pointed out to children that there were big cards, answer cards, and the prominent characteristics of the cards (e.g., blue, yellow, orange, and cars, flowers, and dogs). The experimenter demonstrated the first two cards. The experimenter explained that children took a big card and that children needed to figure out how the two pictures on the card were the same. Children were then asked what each picture on each card was and/or what color each picture was, depending on the matching characteristic of the big card. The experimenter then asked children how they were the same until children answered correctly. Children were then instructed to look through the box of answer cards for the card that had the same attribute that the two pictures on the large card share. The answer card was then affixed to the big card. If children were able to continue to the next example card, the experimenter did not interrupt. However, if children

could not, the experimenter would go through the second example with the child. The experimenter repeated the two examples as much as needed. After a brief summary from the experimenter, the experimenter removed the two answer cards from the example big cards and returned the answer cards to the box. The experimenter kept the two example big cards. The experimenter watched children complete the first two cards. If children were able to complete the first two cards correctly, the experimenter left the room. If children were not able to complete one of the first two correctly, the experimenter demonstrated again as in the examples above. Once children were successful with the first two cards, they were asked to complete the cards by themselves. The experimenter left the room and started timing once they closed the door. After four minutes, the experimenter walked back into the room to start the next activity.

Dinky toys. For the last task (Kochanska et al., 1996), experimenters entered the room with a closed box of toys and asked children to sit on the ground with their backs to their parents. Children were asked to place their hands on their lap and to keep them on their lap. The experimenter asked children to look in the box and *tell* the experimenter what toy they wanted to take home without reaching for it themselves. After the first toy was chosen, experimenters told children that they were allowed to choose one more toy. The same procedure was followed again, asking children to keep their hands on their lap.

Measures

Children's language measure. Subtests were given in the standardized order. Only the subtests of Word Structure, Expressive Vocabulary, and Recalling Sentences were used for the current study because they were included in the Expressive Language scale. Word structure evaluated children's ability to apply word structure rules and select and use appropriate pronouns. Expressive vocabulary measured children's ability to label illustrations of people,

objects, and actions. Recalling sentences evaluated children's ability to listen to spoken sentences, repeat sentences without changing meanings, inflections, comparisons, etc. The CELF Preschool – 2 is standardized for children aged 3 to 6 years and provided scaled scores. The reliability for the chosen subtests range from .86 to .90.

The raw score for each subtest was found by summing the correct answers. The scaled score for each test was found by reviewing the tables in the manual. To find the Expressive Language scale, the scaled subtest scores was summed and then the standard score was found by reviewing the tables in the manual. The scaled subtest score was used in analyses.

Parental emotion coaching philosophy. DVD recordings of the parent-child emotion talk task were coded for parents' encouragement and coaching of their children's emotions when children responded to the happy and upset event (Dunsmore et al., 2013). Each event was assigned two codes for a total of four variables. Parental encouragement of positive emotions and parental encouragement of negative emotions was coded on a 6-point scale (0 = no encouragement, 1 = acknowledgement of event, 2 = acknowledgement of emotion, 3 = labeling/validating emotions once, 4 = labeling/validating emotions multiple times, 5 = coaching/explaining causes and consequences once, 6 = coaching/explaining causes and consequences multiple times) for each event. Acknowledgement of the event was discussing the event itself. Acknowledgement of the emotion included showing recognition of the expressed emotion and included nonverbal acknowledgement such as a pat on the back and mirroring the emotion. Labeling/validating emotions was when parents help their children verbally label or empathize with their emotions. Coaching/explaining was when parents addressed causes and consequences of emotions or strategies to deal with emotions.

Reliability coding. Two students coded the DVDs of the parent-child emotion talk task for emotion coaching. To calculate reliability, 25% of the sample was coded independently by two individuals, and intraclass correlations (ICCs) were used to calculate the reliability for each code. ICCs, according to Oritz (n.d.), are useful when there are two coders and the data are continuous. If simple Pearson correlations were used, the correlations would typically be inflated because the coders' scores can be highly correlated with each other but show little agreement. An ICC is an index of the reliability of the ratings as if there was only a single judge. Reliability intraclass correlations were .85 (encouraging positive emotion during the happy event), .93 (encouraging negative emotion during the upset event), .74 (encouraging positive emotion during the happy event), and .76 (encouraging negative emotion during the upset event).

Children's effortful control. To score children's effortful control in the dinky toys task, the coding scheme by Kochanska et al. (1996) was used. For each toy choice, children's lowest strategy was recorded (0 = grabs toy, 1 = touches toy, but does not take toy out, 2 = points to toy, 3 = removes hands from lap, 4 = twitches or moves hands, 5 = does not remove hands). Children's effortful control score for both trials was significantly correlated, $r(155) = .54$, $p < .001$, so the mean score from both trials was used.

Reliability coding. Two student pairs each coded the DVDs of the dinky toys task. To calculate reliability, 20% of the sample was coded independently by two individuals. For dinky toys, kappas were used to calculate the reliability because the coding was of a limited range. A kappa (Howell, 2002) is a measure of the agreement between two judges for data that is mutually exclusive and has a limited range. The interrater reliability (κ) for dinky toys was .97 (trial 1 strategy) and .96 (trial 2 strategy).

Children's negative emotionality. Children's observed emotion was coded during the locked box task. Anger and sadness were coded on a scale of 0 to 3 (0 = no emotion, 1 = low intensity emotion, 2 = moderate emotion, 3 = intense emotion) in 5 second epochs using facial, body, and vocal indicators as described in the PS Lab-TAB manual (Goldsmith et al., 1993). The mean score was found for each emotion by averaging the displayed emotion across all of the episodes. A summary score of negative emotionality was created by taking the mean score of sadness and anger.

Anger facial indicators included brows drawn together, down straight or slanting toward the center, cheeks raised, and mouth straight, angular, or tightly shut. There could also be bulges or wrinkles around the brows. Bodily indicators of anger included bodily movements that indicated children were angry such as bodily tension indicating frustration, stomping, and pounding of fists. Vocalization indicators of anger included negative vocalizations such as angry protests or an angry cry, which is a loud, strong cry.

Sadness facial indicators included the inner corners of brows raised and outer corners lowered so the skin below the brows forms a triangle shape. Eyes could be narrowed or squinted with cheeks raised. Corners of the mouth could be pulled down and out with mouth open or closed. The upper lip could protrude at the center. Bodily indicators of sadness included bodily movement that indicated sadness such as appearing deflated, dropped head, slumped shoulders, and sinking in the chair. Vocalization indicators of sadness included negative vocalizations such as rhythmic crying, which is softer than an angry cry.

Reliability coding. Two students coded the DVDs for children's emotionality during the locked box task. To calculate reliability, 20% of the sample was coded independently by two

individuals, and ICCs were used to calculate the reliability for each code. The reliability intraclass correlations for the locked box task were .89 (sadness) and .83 (anger).

Children's private speech. Students transcribed the speech from the DVD recordings of the selective attention task, as described by Winsler, Fernyhough, McClaren, and Way (2005). Once the coders felt comfortable with the transcription process, they divided the recordings and transcribed the speech spoken by the children. The speech was separated into utterances. An utterance was a clause with intentional markers of termination, a complete sentence, a sentence fragment, a conversational turn, or any string of speech that was separated from another by at least two seconds. Utterances could not include any temporal or semantic discontinuities. A semantic discontinuity includes any significant change of content, regardless of whether a pause was present or not, while a temporal discontinuity is a pause of at least two seconds.

Once the task was transcribed, the transcripts were coded for children's speech when watching the DVDs so that the transcripts were checked through this process. Speech was coded as either social speech or one of the mutually exclusive speech categories, based off Chiu and Alexander (2000), Krafft and Berk (1998), Manning et al. (1994), and Winsler et al. (2005). The frequency of each category of speech was coded until the child finished working on the task. The total number of utterances in each category during the entire task was calculated and used in the analyses.

Social speech was speech toward another individual, which could be indicated by a gaze to another person, a pronoun reference, conversational turn taking, or argumentation (e.g., "Look I did all of these by myself," "Mom I know I can figure this out because I only have two left"). Private speech categories included vocalizations, inaudible muttering, task-irrelevant private speech, negatively valenced task-relevant private speech, and facilitative task-relevant private

speech. The category of *vocalizations* included noises that were not actual words, including humming and singing (e.g., "Dookadooka," "Bah bah"). *Inaudible muttering* included utterances that appeared to be words, but the words were not understandable. *Task-irrelevant private speech* was speech not related to the task at hand (e.g., "Upside down," "There's a duck there's a turtle"). *Negatively valenced task-relevant private speech* was speech that seemed to inhibit or stop efforts to open the box. Children's speech was focused on their inability to complete the task and included giving up and quitting (e.g., "But I can't do it by myself," "These cards too hard"). *Facilitative task-relevant private speech* included any speech that was related to the task but was not seen as inhibiting children's progress of trying to open the box. Utterances included questions to the self, making goals, and a description of hindrances (e.g., "Need more blue," "And this is dog and this is a dog").

Reliability coding. Two students coded the transcripts and DVDs of the selective attention task for the speech categories. To calculate reliability, 20% of the sample was coded independently by two individuals in each coding team, and kappas were used to calculate the reliability. Interrater reliability (κ) for children's speech was .93, reflecting agreement between coders on all of the speech variables.

Parental-Report Measures

Parents provided demographic information, including parent's age, race, ethnicity, marital status, education, occupation, and income, and parents were asked to complete the following measures described below.

Emotion coaching philosophy. Primary caregivers completed the Parent's Beliefs about Children's Emotions Questionnaire (PBACE; Halberstadt et al., 2013), which assessed parental beliefs about their children's emotions. Parents rated 47 items on a 6-point Likert-type scale (1 =

strongly disagree and 6 = strongly agree). The scales that were used from the PBACE were (1) value of positive emotions (5 items, sample item: "It is important for children to be able to show when they are happy"; α = .90 for this sample), (2) value of negative emotions (7 items, sample item: "It is useful for children to be angry sometimes"; α = .73 for this sample), and (3) parents' role in guiding children's emotions (5 items, sample item: "It is a parent's job to teach their children how to handle their emotions"; α = .91 for this sample). The scales were computed by finding the mean of the items. These scales were chosen because they have already been used as a measure of parental emotion coaching philosophy (Dunsmore et al., 2013). These scales were significantly correlated (all correlations were .20 or higher, *p*s < .01), so all three scales were combined and the mean score was used in analyses.

Child temperament. Parents completed the Childhood Behavior Questionnaire – Short Form (Putnam & Rothbart, 2006) as a measure of temperament. Parents rated the 122 items on a seven-point scale (1 = extremely untrue of my child and 7 = extremely true of my child). The subscales used in the effortful control and negative emotionality scales were computed by averaging each item in each subscale.

The scale of effortful control was created by averaging the subscales of (1) attention focusing (14 items, sample item: "When picking up toys or other jobs, usually keeps at the task until it's done"; α = .78 for this sample), (2) attention shifting (12 items, sample item: "Has an easy time leaving play to come to dinner"; α = .80 for this sample), and (3) inhibitory control (13 items, sample: "Can wait before entering into new activities if s/he is asked to"; α = .84 for this sample). These subscales were chosen because they are theorized to be measures of effortful control (Eisenberg et al., 2011). These scales were either approaching significance or

significantly correlated (all correlations were .16 or higher, *p*s < .06), so all three scales were combined and the mean score was used in analyses.

The scale of negative emotionality was created by averaging the subscales of (1) sadness (7 items, sample item: "Seems to feel depressed when unable to accomplish some task"; α = .60 for this sample) and (2) anger/frustration (6 items, sample item: "Has temper tantrums when s/he doesn't get what s/he wants"; α = .79 for this sample). These subscales were significantly correlated, $r(154) = .36$, $p < .001$, so the two subscales were combined and the mean score was used in analyses.

Results

Once data collection and coding were finished, I first screened the data. Descriptive data analyses were completed to make sure variables were as expected with the proper range of data and the expected mean and standard deviation (Howell, 2002). As far as missing data, one parent only completed the CBQ, two parents did not complete the CBQ, and one child would not complete the selective attention task. While the missing data was imputed for the path models (discussed in more detail below), pairwise deletion was used for correlations and t-tests. Lastly, missing data were checked to make sure the data was supposed to be missing.

Composite Variables

Composite variables were created for parental emotion coaching philosophy, children's effortful control, children's beneficial private speech, and children's negative emotionality. As discussed in Dunsmore et al. (2013), a mean score of parental encouragement was calculated by averaging the parental encouragement of both positive and negative emotions between both the happy event and upset event. Then, the three subscales from the PBACE (value of positive emotions, value of negative emotions, and parents' role in guiding emotions) and parental

encouragement from the parent-child emotion talk task were standardized so that the mean for each scale was 0. The scales were averaged to form an emotion coaching composite. The effortful control score from the dinky toys task and the effortful control scale from the CBQ were combined to create a composite effortful control variable. The variables were standardized and averaged to create an overall effortful control variable. The beneficial private speech composite variable included the two forms of private speech that are believed to be beneficial during the preschool years, which were inaudible muttering and facilitative task-relevant private speech (e.g., Fernyhough & Fradley, 2005; Winsler et al., 2003). The two raw private speech scores were summed to create a composite beneficial private speech category. Lastly, children's observed anger and sadness were combined with the anger and sadness scales from the CBQ. The variables were standardized and averaged to create an overall negative emotionality variable.

Preliminary Analyses

It is the general consensus that there should be 10 participants per an estimated parameter within a structural equation model (Schreiber, Nora, Stage, Barlow, & King, 2006). My hypothesized model with covariates included 15 parameters. Therefore, a sample of 156 children was above the necessary sample size.

Descriptive statistics of the variables can be found in Table 1. The hypothesized model was investigated in Mplus 7.11 (Muthén & Muthén, 2012) and was found to not be significant. As a result, relations between variables were examined using correlations to see if the variables were significantly related. Emotion coaching was not related to effortful control (see Table 2) or children's beneficial private speech. However, when emotion coaching was measured using parental encouragement of negative emotion during the upset event, it was significantly related

to effortful control. In addition, children's negative emotionality was not related to effortful control or beneficial private speech. When children's effortful control and children's negative emotionality were measured by parent-report on the CBQ, they were related. In addition, when private speech was measured using non-beneficial private speech, it was significantly related to children's negative emotionality on the CBQ, even though it was not related to parental emotion coaching. The non-beneficial private speech category was created by summing vocalizations, task-irrelevant private speech, and negatively valenced task-relevant private speech (e.g., Berk, 1986; Broderick, 2001; Day & Smith, 2013). For the final model, parental emotion coaching was significantly related to children's effortful control (see Table 2) but not to children's non-beneficial private speech. However, children's negative emotionality was related to children's effortful control and children's non-beneficial private speech. The new variables were necessary for a significant model.

Once the variables were decided upon, the data were checked for outliers and univariate normality with statistical software. Boxplot graphs were reviewed and no outliers were found in the data. According to Kline (2005), variables should have a skew and kurtosis of less than +/- 2.0. Having highly skewed or kurtotic variables can result in incorrect analyses. A positive skew means that most of the scores are below the mean, and a negative skew means most of the scores are above the mean. A positive kurtosis means that the tails of the data are heavier and the peak is thin and high, and a negative kurtosis means the tails are lighter and the peak is lower and flatter. Kline (2005) recommends taking the natural log, square root, or inverse of the data to correct for extreme skew and kurtosis. The transformed data were correlated with the original data to make sure both variables were highly correlated to know that the transformation did not change the data dramatically.

The only variable that needed to be transformed was children's non-beneficial private speech, which was slightly skewed (2.17) and kurtotic (4.46). After a square root transformation, the variable was within the acceptable range of skew (0.85) and kurtosis (-0.09). Parental emotion coaching was also slightly kurtotic (2.64), but it was unable to be fixed without substantially changing the data.

Next the data was checked for multivariate outliers. A program for SPSS software (DeCarlo, 1997) was used to measure multivariate normality statistic. DeCarlo uses the Mahalanobis distance (Mahal D) statistic which indicates the distance in standard deviation units between a set of scores for an individual case and the sample means for all variables (Kline, 2005). There were no significant outliers in the data set. The critical values for a single multivariate outlier were 19.79 (.05) and 22.84 (0.1). The Mahal D for each of the top 5 possible outliers were below both critical values, with the highest being 16.62, so they were not seen as outliers.

Preliminary analyses included testing for relations with child expressive language ability and sex. Correlations were examined between the study variables with children's expressive language ability and t-tests were performed to investigate sex differences.

Children's expressive language ability did not relate to children's non-beneficial private speech, $r(155) = .09$, $p = .27$, or to children's negative emotionality, $r(153) = -.10$, $p = .23$. There were relations approaching significance between children's expressive language ability and children's effortful control, $r(153) = .15$, $p < .10$, and parental emotion coaching, $r(155) = .14$, $p < .10$. While there were no significant relations between expressive language ability and the study variables, I still tested to see if expressive language ability would be a significant

covariate in my path model in case the relation between the variables was significantly related to expressive language ability.

The only significant sex difference was for children's effortful control, $t(152) = 2.02$, $p < .05$, with girls reported as having greater effortful control than boys. As a result of the significant relation, child sex was included as a possible covariate in the path models for my second and third research questions.

Relations with Age

For my first research question, does children's age relate to parental emotion coaching philosophy or their private speech, effortful control, or negative emotionality, I used Pearson correlations to investigate the relations between children's age and my study variables. Child age was not related to parental emotion coaching, $r(156) = -.01$, $p = .87$ or children's effortful control, $r(154) = .01$, $p = .90$. However, children who were younger spoke more non-beneficial private speech, $r(155) = -.19$, $p < .05$. There was also a relation approaching significance between child age and negative emotionality, $r(154) = .16$, $p < .10$, with older children reported as more emotionally negative. Therefore, children who were younger spoke more non-beneficial private speech and were less emotionally negative.

As a result of a previous research finding that children's private speech has a curvilinear relationship with age (Winsler et al., 1997), scatterplots were investigated for each variable with linear and quadratic best fit lines. Parental emotion coaching could not be included in this process because it was a categorical variable. Children's effortful control continued to not be related to children's age. However, children's non-beneficial private speech was found to have higher R^2 values for the quadratic best fit line than the linear best fit line. Children's age explained 3.7% of the variation in non-beneficial private speech with a quadratic line, in

comparison to 2.5% of the variation in non-beneficial private speech when a linear line was fitted to the data (see Figure 2). The relation was curvilinear with children who were younger using more non-beneficial private speech.

Mediated Effects of Private Speech and Effortful Control

In order to investigate my second research question, does children's self-regulation, as measured by private speech and effortful control, mediate the relation of parental emotion coaching to children's negative emotionality, a path model was created.

Maximum Likelihood (ML) estimation method is the most popular and default method (Kline, 2005). It produces unbiased and consistent estimates and is preferable for small sample sizes. ML estimation is also scale free and scale invariant, which is preferred when variables have different scales. ML estimation assumes data are missing at random (MAR) and imputes missing values accordingly. MAR means that the missing observations on a variable differ from the observed scores only by chance (Kline, 2005). If the presence or absence of the observations is unrelated to any other variable then the data are missing completely at random (MCAR), but this rarely occurs in actual datasets. Imputing datum is preferable to listwise deletion because I did not want to remove entire participants from my dataset if they had missing data for one task. In addition, pairwise deletion is not recommended for path models because when the individual values of the covariance matrix are based on different numbers of cases is it possible that some of the values will be mathematically out of range and will not be calculated if the covariances were calculated using the same cases as with listwise deletion. The covariance matrix may be nonpositive definite or singular which means specific mathematical operations with the matrix will fail because of problems like the denominators equaling zero (Kline, 2005). However, ML also assumes multivariate normality and that the variables are not highly skewed or kurtotic.

As a result of parental emotion coaching being slightly kurtotic, I ran my model with ML and Maximum Likelihood Estimation with Robust Standard Errors (MLR) in Mplus. MLR produces the same parameter estimates as ML estimation, but the standard errors for the parameters are calculated differently because it handles moderate violations of assumptions, such as non-normality of data, better than ML. I found that both models were very similar, so I focused on my findings from the MLR estimation method to be more conservative.

I used the standardized root mean squared residual (SRMR) as my omnibus fit index and supplemented it with the Comparative Fit Index (CFI) because they are recommended for smaller sample sizes (Hu & Bentler, 1998). The combination of the two allows for the smallest likelihood of Type I and II error rates. Type I error is the probability of falsely rejecting the null hypothesis and Type II error is the probability of falsely accepting the null hypothesis. According to Hu and Bentler (1998), the recommended cut-offs are less than or equal to .08 for SRMR and greater than or equal to .95 for CFI.

Baron and Kenny's (1986) seminal article on mediation defined it as a variable through which the independent variable affects the dependent variable. While it was originally thought that there cannot be any significant direct effect between the independent variable and dependent variable, partial mediation is now acceptable, through which the mediator variable should strengthen the relation between the independent and dependent variable (MacKinnon, 2008). To investigate whether mediation occurred, I utilized bootstrapping to estimate and contrast specific indirect effects in Mplus (Preacher & Hayes, 2008). Bootstrapping is a nonparametric resampling procedure which does not impose the assumption of normality. The program repeatedly samples from the dataset and estimates the indirect effects in each resampled dataset.

The process of resampling many times allows for confidence intervals for the indirect effects which provided greater support to any mediation which is found.

For each dependent variable in the path model, child sex, age, and expressive language ability were entered as possible covariates. If the covariates were not significantly related, they were removed. For the final model, child sex was a covariate for children's effortful control, and child age was a covariate for non-beneficial private speech and children's negative emotionality (see Figure 3). The model was significant because the SRMR was .02, which was below the required .08, and the CFI was 1.00, which was above the required .95 (Hu & Bentler, 1998). Parental emotion coaching significantly predicted children's effortful control but did not predict children's non-beneficial private speech. Parents who displayed more encouragement of children's negative emotions during the upset event had children who were reported to have greater effortful control. In addition, children's effortful control and non-beneficial private speech did predict children's negative emotionality. Children who were reported to have greater effortful control and children who used lower levels of non-beneficial private speech were also reported to be less emotionally negative. It was also interesting that parental emotion coaching did not directly predict children's negative emotionality.

Using bootstrapping, with 95% confidence, children's effortful control did mediate the relation of parental emotion coaching to children's negative emotionality (bootstrap confidence interval of -0.15 to -0.01). Therefore, parents who supported negative emotions during the upset event had children who were reported as having greater effortful control and in turn these children displayed less negative emotionality. However, while children's non-beneficial private speech did relate to children's negative emotionality, it did not mediate the relation between parental emotion coaching and children's negative emotionality.

Interaction of Private Speech and Effortful Control

To investigate my third research question, did children's beneficial private speech moderate the relation of children's effortful control to negative emotionality, I created an interaction variable by multiplying the centered children's effortful control variable and centered non-beneficial private speech variable (Cohen, Cohen, West, & Aiken, 2003). The two models, one with the interaction term (less restrictive model), and one without the interaction term (nested, more restrictive model) were compared in order to find which model fit best. To keep the sample sizes for both models the same, the interaction term was entered in the nested model, but its effect was fixed to zero. As a result of the MLR estimation method, the resulting chi-square was Satorra-Bentler scaled (mean-adjusted), in which the usual normal-theory chi-square statistic is divided by a scaling correction so that the chi-square is approximated under non-normality ("Chi-square difference testing", n.d.). As a result, a typical Chi-Square Difference Test could not be used. Following the instructions on the Mplus website, the chi-square critical value was 3.7486 with 1 degree of freedom. The model with the interaction was better fitting with a p-value of .05, so it was a better fitting model than the model without the interaction value. The interaction term was included in the previously discussed significant path model. In addition, the interaction term significantly predicted children's negative emotionality, so it was probed using hierarchical regression according to Cohen et al. (2003).

For the hierarchical regression to probe the interaction variable, child age, sex, and expressive language ability were entered on the first step with parental emotion coaching. Children's centered effortful control and non-beneficial private speech were entered on the second step. Lastly, the interaction term of children's effortful control by non-beneficial private speech was entered on the third step (Cohen et al., 2003).

The model and interaction term were significant (see Table 3). The significant interaction term in the hierarchical regression signified that the slopes were different from each other but not whether the slopes differed from zero. The next step was to probe the interaction term following the method described by Cohen et al. (2003). Predicted values of children's negative emotionality were computed for the predictor (effortful control) and moderator variable (non-beneficial private speech) at the mean and one standard deviation above and below the mean. Predicted values were found by multiplying the respective unstandardized regression coefficient for each variable by -1 and 1 for standardized variables, which was done for each variable in the equation. These values were then used to create a line graph representing the interaction effect. The next step was to see if the slopes were statistically different from zero. To test the significance of the slopes, additional regressions were carried out using the mean of the centered private speech variable (0) and the values 1 standard deviation above and below the mean.

The relation of children's effortful control to children's negative emotionality was significant for children who used low (slope = -0.77, $p < .01$), moderate (slope = -0.56, $p < .01$), and high (slope = -0.35, $p < .01$) levels of non-beneficial private speech (see Figure 4). When children's effortful control was low they had high levels of negative emotion, regardless of the level of non-beneficial private speech. However, children with higher levels of effortful control were reported as less negative when non-beneficial private speech was low.

Discussion

This research showed that children's cognitive and emotional self-regulation are both important in explaining children's negative emotionality. Children's effortful control significantly mediated the relation of parental emotion coaching to children's negative

emotionality. Parents who encouraged negative emotion more during the upset event had children who were reported to have greater effortful control, and in turn, were reported to be less emotionally negative. While emotion coaching did not significantly predict children's non-beneficial private speech, children who spoke less non-beneficial private speech were reported as less emotionally negative. Most importantly, children's private speech and effortful control interacted to predict children's negative emotionality. These relations were found after controlling for child age, sex, and expressive language ability, when necessary.

Children's effortful control was conceptualized as a strategy of emotion regulation because of the central role it plays in emotion regulation (Eisenberg et al., 2011), and effortful control was found to significantly mediate the relation of parental emotion coaching and children's negative emotionality. This finding supported previous research on the importance of effortful control as a mediating variable (Eisenberg et al., 2009; Eisenberg, Zhou, et al., 2005; Hofer et al., 2010; Kochanska & Knaack, 2003; Spinrad, Eisenberg, Gaertner, Popp et al., 2007; Valiente et al., 2006). Although parental emotion coaching did not significantly predict children's emotionality, it did predict children's negative emotionality through effortful control. This finding also supports previous research that parental emotion coaching assists with children's ability to manage their emotions (e.g., Dunsmore et al., 2013; Ramsden & Hubbard, 2002) because emotion coaching was related to better effortful control and to negative emotion through the mediating variable of effortful control. The current study built upon previous research on the importance of effortful control as a mediating variable because parental emotion coaching included a cognitive component of how parents teach children about emotions, whereas previous research had typically examined other aspects of parent socialization. These findings demonstrate that teaching children about emotions is important to children' ability to control

their emotions and that it is not only positive interactions with children and warmth that are significant.

In contrast, parental emotion coaching did not relate to children's private speech, neither beneficial nor non-beneficial. These findings were interesting because measures of parental socialization have been found to relate to children's private speech (Berk & Spuhl, 1995; Winsler, 1998; Winsler et al., 1997). It may be that emotion coaching, which is focused on supporting and encouraging children's emotions, may have been related to children's private speech during an emotion-eliciting task because the need to regulate emotion during the task would have been higher. Children attempting to open a box to play with the toys inside would most likely need to control their emotions more than children who are matching pictures in the more cognitive selective attention task. Although cognitive tasks include emotional aspects, the cognitive task used in this study may not have been as emotionally-taxing as other cognitive activities and thus private speech did not relate to parental emotion coaching.

It was surprising that the proposed parental emotion coaching variable that included beliefs and actions had to be replaced by an observational measure of parental encouragement of negative emotion during an upset event. While observed parent emotion coaching of negative emotions during the upset event significantly predicted children's effortful control, the parent-reported emotion coaching variable did not, so parent-reported emotion coaching was not a good fit within the model. This may be related to the age of the children included in this study. The emotion-talk task was first used to measure emotion coaching with children aged 7-14 years (Dunsmore et al., 2013). Parental beliefs may not always significantly predict children's outcomes when children are young. Parents may believe positive and negative emotions are beneficial and want to teach causes and consequences but do not know how to practice their

beliefs with young children because preschool children's language comprehension and expressive abilities are still developing (Caravale, Mirante, Vagnoni, & Vicari, 2012; Kopp, 1989). Although parents may support an emotion coaching philosophy in theory, their beliefs and attitudes may be more strongly related to children's outcomes when they are older. In addition, parental coaching of negative emotions may be the most salient and important piece of emotion coaching when children are young. Young children are learning how to handle these negative emotions (Kopp, 1989) and parents supporting children's negative emotions and discussing causes and consequences may be very important to children's effortful control. Children who learn about causes and consequences of emotions may be better able to regulate their emotion, and in turn be less emotionally negative, because they have a better understanding of what they are experiencing.

It was very interesting that children's non-beneficial private speech was a significant predictor of their negative emotionality with children who used less non-beneficial private speech reported as being less emotionally negative. Researchers often focus on beneficial forms of private speech, but the current findings show that it may be better to investigate non-beneficial private speech because children who are low in non-beneficial private speech are either quiet or using more beneficial private speech which are both believed to be valuable (e.g., Fernyhough & Fradley, 2005; Winsler et al., 2003; Winsler, Diaz, et al., 2000). Silence is not always considered in private speech research, but it can mean one of two things. Older children and children who are capable of completing the task may be silent because they do not need private speech to help them complete the task. In contrast, younger children, or children less capable of completing the task, may be silent but struggle while working on the task. While it is possible

that children may sit silently and struggle with the task, this relation could be clarified by including a measure of task performance in future research.

Beneficial private speech may not have been significant in the model because children's negative emotionality was a composite variable of anger and sadness, which have different functions (Campos, Barrett, Lamb, Goldsmith, & Sternberg, 1983). Anger is often in response to perceiving a goal is attainable once an obstacle blocking the goal is overcome, so the adaptive response is to attempt to overcome the obstacle. In contrast, sadness is often a reaction to believing a goal is unattainable, so the adaptive response would be to give up. Private speech was measured in a cognitive task that was difficult, but not impossible, to complete. Children who spoke more beneficial private speech may have been more likely to complete the task because they used their speech to focus their efforts to complete all of the cards. Children who used more beneficial private speech were found to be reported as more angry, a relation that was approaching significance (see Table 2). If anger and sadness were investigated in the model separately, the relations between beneficial private speech and anger and sadness may have been better understood. It may be that effortful control moderated the association of beneficial private speech to anger and sadness and that may help explain the unexpected positive association between beneficial private speech and anger.

Expressive language ability was not needed as a covariate for children's non-beneficial private speech. Previous research has found that children with greater receptive language ability used more beneficial private speech (Al-Namlah et al., 2006; Al-Namlah et al., 2012; Berk & Spuhl, 1995), while many researchers have not found any significant relations between receptive language ability and children's private speech (Fernyhough & Fradley, 2005; Winsler et al., 1997; Winsler et al., 2007). The current study built upon these conflicting findings by

investigating children's expressive language ability and found that it was not related to children's non-beneficial private speech. Since private speech is directed to the self, it may be that this speech is more basic and simplistic so that it is not related to children's increasing complexity of language.

The significant interaction between children's private speech and effortful control predicting children's negative emotionality further supported the belief that a lack of non-beneficial private speech may be a more productive means of investigating children's private speech. When children's effortful control was low, they had high levels of negative emotionality, regardless of how much non-beneficial private speech they used. However, children with higher levels of effortful control were reported as less negative when non-beneficial private speech was also low. These children who were low in negative emotion may have been better able to self-regulate because they were high on effortful control and did not resort to using the categories of private speech that have been found to be less beneficial for children's cognitive and emotional self-regulation. It is also possible that children's effortful control may aid their regulation of their cognition because the two interacted. This finding further supports the importance of investigating children's cognitive and emotional development together. This replicated my previous finding that children's private speech interacted with their emotion regulation to predict their emotionality (Day & Smith, 2013), even though in this study I measured private speech during a more typical cognitive task and measured emotion regulation with the more broad measure of reported effortful control.

My model was significant even after controlling for children's age, when necessary. As a result of the wide age range and the importance of the preschool period for children's developing self-regulation, I investigated how children's age would relate to parental emotion coaching

philosophy and children's private speech, effortful control, and negative emotionality. Specifically, it was expected that children's age would not be related to their parents' emotion coaching, while older children would use less non-beneficial private speech and be reported to be less emotionally negative but higher in effortful control. It was found that older children were reported as more emotionally negative, and there was a quadratic relation between children's age and non-beneficial private speech with younger children using more non-beneficial private speech.

A quadratic line best fit the relation between children's age and non-beneficial private speech, but it is clear that the overall level of non-beneficial private speech was decreasing over time (see Figure 2). This matches previous findings that non-beneficial forms of private speech decrease as children get older (Al-Namlah et al., 2006; Al-Namlah et al., 2012; Winsler et al., 1997). As children develop, they are most likely better able to complete the task, so they are less likely to resort to the less beneficial forms of private speech. As a result, older children who are more capable and have better cognitive skills would be either using more beneficial private speech or being silent since they do not require private speech to help them complete the task.

My finding that children who were older were reported as higher in negative emotion adds to a conflicting body of research. Some researchers have found age to be unrelated to negative emotion during the preschool years (Eisenberg et al., 1994; Liebermann et al., 2007; Portegal & Archer, 2004), some researchers have found anger and sadness to increase (Gaertner et al., 2008), and some researchers have found it to decrease as children get older (Carlson & Wang, 2007). For this sample, anger was seen as increasing over the age range, but when children are 5-years-old their negative emotion may be more salient to their parents. Parents may expect their 5-year-old children to be better able to manage their emotions. Because

negative emotion was parent-report, parents' perceptions of the acceptability of negative emotion over the preschool years may have been related to this age relation.

Whereas previous researchers have found that older children have greater effortful control (Allan & Lonigan, 2011; Carlson & Wang, 2007; Kochanska & Knaack, 2003), I did not find that they were related. However, there was a relation approaching significance between expressive language ability and effortful control. Children with greater expressive language ability were found to have greater effortful control, which adds to previous findings that children with greater receptive language ability have greater effortful control (Blair & Razza, 2007; Carlson & Wang, 2007; Lieberman et al., 2007). Children with greater expressive language ability may be better able to express their emotions and thoughts with their parents, which supports theoretical propositions that language is very important to children's emotion regulation abilities (e.g., Kopp, 1989; Thompson, 1990). With this highly varied age group, expressive language ability may have been a better measure of developmental ability than simply measuring children's chronological age.

The lack of age differences in this preschool-age range matched previous findings for emotion coaching (Katz & Windecker-Nelson, 2004; Laible, 2004; Perez Rivera & Dunsmore, 2011). It may be that parents do not alter their discussions about emotions as a result of their children's age, but rather as a result of their children's language ability since there was a relation approaching significance with children who had greater expressive language ability had parents who encouraged negative emotion more. Since children's language ability is not typically investigated with parental emotion coaching, the finding that children with greater expressive language ability had parents who encouraged more negative emotion was an important finding. Children who are better able to express themselves verbally may be more capable of these

higher-level conversations with their parents. Future research should investigate this dynamic relationship over time with a longitudinal sample.

While there were many important findings from this research, there were also limitations. The sample was predominantly white and middle class, so these findings need to be replicated in a more diverse sample to increase generalizability. In addition, children's effortful control and negative emotion were measured only by parent-report. Composite variables of children's observed and reported behavior and emotionality during the effortful control and emotion regulation tasks were not significant in the model, but reported effortful control and emotionality were. Questionnaires are often critiqued for measuring parental perceptions, but parents are able to report on a wide range of their children's behavior that they observe on a day-to-day basis (Rothbart & Bates, 1998). In contrast, observational tasks only allow measurements of behavior during specific tasks. In addition, parent-report has also been found to be relatively objective and valid. It is possible that more tasks were needed to strengthen the observational measures of effortful control and emotionality or that different tasks were needed. These findings would be better supported if they were found when parent-report and observational measures were included together so that it would be known that the significant finding between effortful control and negative emotion was not a result of shared method variance. With the current model, it is possible that parents who use more emotion coaching during the upset event may tend to report their children's effortful control and emotionality in a specific way. Therefore, a replication study is needed with more observational tasks of children's effortful control and negative emotionally.

Non-beneficial private speech may have been the significant predictor in the final model because it may be more of a reflection of emotion than beneficial private speech. The categories

of private speech included in the non-beneficial composite were task-irrelevant private speech, negatively valenced task-relevant private speech, and vocalizations. These three types of private speech were combined to create a non-beneficial private speech composite because they were all related to poorer outcomes in previous research. Children who used more task-irrelevant private speech have been found have less focused attention and goal-directed behaviors (Berk, 1986; Winsler et al., 2003), poorer self-regulatory ability (Winsler et al., 2011), and poorer task and academic performance (Manning et al., 1994; Winsler et al., 1997). In contrast, children with higher levels of negatively valenced task-relevant private speech have been found to display higher levels of anger and sadness (Day & Smith, 2013) and be reported as having poorer emotion regulation (Broderick, 2001). Therefore, negatively valenced task-relevant private speech may be a reflection of emotionality. Lastly, vocalizations was a category created recently in private speech research because children were found to make a large amount of noises during an emotion-eliciting task (Day & Smith, 2013). Children who used more vocalizations were found to display more anger (Day & Smith, 2013). Previous research has found that children who are more distressed display more venting behaviors such as banging, kicking, and hitting (Calkins et al., 1999; Calkins & Johnson, 1998), and it is likely that vocalizations often accompany these behaviors. Consequently, vocalizations may be related to children's venting of distress, and thus vocalizations may be reflection of children's emotion.

Therefore, two of the non-beneficial private speech categories are less commonly research in private speech research and may be reflections of children's emotionality. Including private speech that were related to negative outcomes in cognitive and emotional tasks and the inclusion of speech categories that were a reflection of emotion may be the reason it was significant in the model although beneficial private speech was not. Thus, there is a possible

confound between private speech and emotion because emotion may be what differentiated beneficial from non-beneficial private speech.

Although the original goal of this study was to measure parental emotion coaching and children's effortful control, private speech, and negative emotionality in three separate tasks, this goal may not have been successful because private speech was measured in a more cognitively-focused task that did not have a strong reactive pull that is present when a reward is provided at the end of the task, such as playing with toys or receiving a small gift (Spinrad, Eisenberg, & Gaertner, 2007). Rewarding children if they completed all the cards correctly could have elicited more emotion from the children during the cognitive task. Beneficial private speech may be a more important predictor of children's negative emotionality when it is measured during a task that has a strong reactive pull, such as found in previous research measuring private speech during emotion regulation tasks (Day & Smith, 2013; 2014).

A direction for future research would be to measure whether children were positive, negative, or neutral when they spoke the private speech utterance. Although I have argued that children's beneficial private speech may be less of a reflection of emotion, children can talk about the task at hand in a very neutral or positive way or display anger and/or sadness when they talk themselves through the task. For example, a child can sit at a table calmly and say "And now I get to find the blue piece" with a large smile on her face and clear excitement over the task, or a child can say the same statement with dropping their shoulders and slouching in their chair. Including the emotional tone of the private speech may clarify the relations between children's private speech in a cognitive task and their emotionality in an emotionally-taxing task.

Lastly, this research was cross-sectional in nature so the directionality is only hypothesized. It is possible that children who are more negative are more susceptible to having

poorer self-regulation, as measured by effortful control and private speech, and these children who are rated as poorer in effortful control have parents who react to their children by using less emotion coaching. Therefore, parents could be reacting to characteristics in their children (e.g., Pluess & Belsky, 2010). In addition, the variables in this study may have bidirectional relations with parents and children affecting each other. To test this possibility, longitudinal data needs to be collected and cross-lagged relations need to be investigated.

Despite the limitations, this is the second study (Day & Smith, 2013) that has found that children's private speech and emotion regulation interacted to better predict children's negative emotion. In addition, accepting and encouraging of children's negative emotions and teaching about them may aid their effortful control. It also furthers supports the belief that private speech should be accepted in classrooms by showing that children's private speech can be an additional cue for teachers (e.g., Winsler, Carlton, et al., 2000; Winsler, Diaz, et al., 2000; Winsler et al., 2007). When children are observed using beneficial private speech, such as talking themselves through the task or muttering quietly to themselves, caregivers and teachers should allow or encourage the speech. This current study adds to the implications from previous research by focusing on non-beneficial forms of private speech. In contrast to beneficial private speech, caregivers and teachers who hear children using non-beneficial forms of private speech, such as talking about how difficult a task is or making vocalizations, may want to intervene to see what is difficult for the children. Children's non-beneficial private speech may provide clues as to what is causing the difficulty, or may simply identify children who need additional scaffolding or support. Therefore, non-beneficial private speech can be an additional form of evaluation that will help teachers and caregivers decide how to best support children who are having difficulty with a task. In conclusion, how parents teach and talk about negative emotions is important

when trying to understand children's effortful control. In addition, children's cognitive and emotion regulation work together when predicting children's negative emotionality and both need to be included in future research to have a complete understanding of young children's self-regulation.

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Table 1

Descriptive Statistics

	M	*SD*	Min	Max
Age (in months)	51.99	9.29	36.20	69.50
Expressive language ability	103.26	13.23	66.00	138.00
Emotion Talk (ET)				
Encourage positive emotion during happy event	3.57	1.67	0.00	6.00
Encourage negative emotion during happy event	0.60	1.47	0.00	6.00
Encourage positive emotion during upset event	1.10	1.82	0.00	6.00
Encourage negative emotion during upset event	5.13	1.21	1.00	6.00
Encourage emotion mean	2.60	0.87	0.50	5.00
Parental Beliefs About Children's Emotions (PBACE)				
Value of positive emotions scale	5.75	0.52	1.00	6.00
Value of negative emotions scale	4.36	0.71	2.14	5.86
Parents role in guiding children's emotions scale	5.55	0.62	2.00	6.00
Emotion coaching philosophy scale	5.22	0.47	2.19	5.95
Dinky Toys (DT)				
Strategy trial 1	3.01	1.48	1.00	6.00
Strategy trial 2	2.18	1.59	0.00	5.00
Strategy mean	2.59	1.35	0.50	5.50
Childhood Behavior Questionnaire (CBQ)				
Attention shifting	4.50	0.70	2.90	5.92
Inhibitory control	4.66	0.76	2.54	6.08
Attentional focusing	4.50	0.68	2.79	6.14
Effortful control scale	4.55	0.56	3.04	5.60

(continued)

	M	*SD*	Min	Max
Selective Attention (SA)				
Social speech	8.74	9.63	0.00	46.00
Vocalizations	2.06	3.47	0.00	18.00
Inaudible muttering	0.61	1.13	0.00	5.00
Task-irrelevant	0.35	1.11	0.00	6.00
Negatively valenced task-relevant	0.12	0.56	0.00	4.00
Facilitative task-relevant	10.82	11.82	0.00	65.00
Locked Box (LB)				
Anger mean	0.81	0.42	0.06	1.92
Sadness mean	0.36	0.41	0.00	1.96
Childhood Behavior Questionnaire (CBQ)				
CBQ: Anger mean	3.86	1.04	1.33	6.67
CBQ: Sadness mean	3.85	0.84	1.75	6.14
Composite Variables				
ET encourage mean and PBACE encourage mean composite	0.00	0.75	-3.43	1.60
DT strategy mean and CBQ effortful control scale and composite	0.00	0.77	-1.94	1.99
SA beneficial private speech composite	5.72	6.01	0.00	32.50
SA non-beneficial private speech composite	1.10	1.16	0.00	4.24
LB anger and sadness composite	0.59	0.27	0.04	1.44
CBQ anger and sadness composite	3.86	0.78	2.01	6.05
LB and CBQ anger and sadness composite	0.00	0.73	-1.59	1.98

Table 2
Intercorrelations of study variables

		1	2	3	4	5	6	7
1.	Age (in months)							
2.	Expressive language ability	-.26**						
3.	ET: Encourage positive emotion during happy event	.00	.02					
4.	ET: Encourage negative emotion during happy event	-.03	.11	.00				
5.	ET: Encourage positive emotion during upset event	-.24**	.19*	.14+	.01			
6.	ET: Encourage negative emotion during upset event	-.01	.14+	.27**	-.05	.14+		
7.	PBACE: Value of positive emotions scale	-.16+	.04	-.02	-.01	.10	.00	
8.	PBACE: Value of negative emotions scale	-.03	.04	-.03	.14+	.00	.15+	.22**
9.	PBACE: Parents role in guiding children's emotions scale	-.03	.05	.10	.05	.06	.12	.67**
10.	ET encourage mean	-.14+	.20*	.65**	.41**	.64**	.53**	.04
11.	PBACE: Encourage mean	-.09	.06	.02	.09	.06	.13	.77**
12.	ET encourage mean and PBACE encourage mean composite	-.16+	.17*	.46**	.31**	.47**	.45**	.54**
13.	DT: Strategy trial 1	.25**	.15+	-.06	.03	.03	-.09	.00
14.	DT: Strategy trial 2	.22**	.11	-.17*	-.04	.00	-.05	.04
15.	DT: Strategy mean	.27**	.15+	-.14+	-.01	.01	-.08	.03
16.	CBQ: Attention shifting	-.08	.04	-.01	-.08	-.07	.11	.00
17.	CBQ: Inhibitory control	.08	.13	-.10	-.04	-.09	.21**	.00
18.	CBQ: Attentional focusing	.01	.20*	.01	.03	-.04	.18*	-.05
19.	CBQ: Effortful control scale	.01	.15+	-.04	-.04	-.09	.21**	-.02
20.	DT strategy mean and CBQ effortful control scale and composite	.19*	.18*	-.12	-.03	-.05	.07	.01
21.	SA: Social speech	-.26**	-.01	.18*	-.10	.02	.05	.05
22.	SA: Vocalizations	-.13	.11	.11	.02	.17*	.04	.02
23.	SA: Inaudible muttering	-.16*	.17*	-.05	-.03	.01	.02	.06
24.	SA: Task-irrelevant	-.29**	-.01	-.01	-.07	.01	.01	.06
25.	SA: Negatively valenced task-relevant	-.06	-.11	-.03	-.02	.05	-.04	.10
26.	SA: Facilitative task-relevant	-.07	.08	.02	-.04	-.01	-.09	.08
27.	SA: Beneficial private speech composite	-.08	.10	.01	-.04	-.01	-.09	.08
28.	SA: Non-beneficial private speech composite	-.19*	.09	.08	-.04	.13	-.01	.10
29.	LB: Anger mean	.20*	-.20*	.00	.02	-.12	.03	-.10
30.	LB: Sadness mean	.02	-.04	.05	-.04	-.07	-.02	.03
31.	CBQ: Anger mean	.05	-.12	-.07	.06	.04	-.12	.01
32.	CBQ: Sadness mean	.23**	-.03	.03	.03	.05	.08	.06
33.	LB: Anger and sadness composite	.16*	-.18*	.03	-.02	-.14+	.01	-.05
34.	CBQ: Anger and sadness composite	.16+	-.10	-.03	.06	.05	-.04	.04
35.	LB and CBQ anger and sadness composite	.22**	-.19*	.00	.03	-.06	-.02	.00

(continued)

		8	9	10	11	12	13	14
1.	Age (in months)							
2.	Expressive language ability							
3.	ET: Encourage positive emotion during happy event							
4.	ET: Encourage negative emotion during happy event							
5.	ET: Encourage positive emotion during upset event							
6.	ET: Encourage negative emotion during upset event							
7.	PBACE: Value of positive emotions scale							
8.	PBACE: Value of negative emotions scale							
9.	PBACE: Parents role in guiding children's emotions scale	.27**						
10.	ET encourage mean	.09	.14+					
11.	PBACE: Encourage mean	.70**	.82**	.12				
12.	ET encourage mean and PBACE encourage mean composite	.53**	.64**	.75**	.75**			
13.	DT: Strategy trial 1	-.04	.10	-.03	.03	-.01		
14.	DT: Strategy trial 2	.00	.21*	-.12	.10	-.01	.54**	
15.	DT: Strategy mean	-.02	.18*	-.09	.08	-.01	.87**	.89**
16.	CBQ: Attention shifting	-.03	.09	-.04	.03	-.01	.03	.02
17.	CBQ: Inhibitory control	.01	.12	-.04	.08	.02	.19*	.20*
18.	CBQ: Attentional focusing	.12	.12	.06	.10	.10	.18*	.13
19.	CBQ: Effortful control scale	.04	.14+	-.01	.08	.04	.17*	.15+
20.	DT strategy mean and CBQ effortful control scale and composite	.01	.21**	-.07	.10	.02	.68**	.68**
21.	SA: Social speech	.03	.04	.07	.05	.08	-.16+	-.15
22.	SA: Vocalizations	.10	-.10	.16*	.01	.12	-.13	.00
23.	SA: Inaudible muttering	-.02	.05	-.03	.03	.00	.10	.17*
24.	SA: Task-irrelevant	.05	.05	-.02	.07	.03	-.27**	-.12
25.	SA: Negatively valenced task-relevant	.07	.06	-.02	.10	.06	-.15+	.04
26.	SA: Facilitative task-relevant	.05	.00	-.05	.05	.01	-.03	.05
27.	SA: Beneficial private speech composite	.05	.01	-.05	.06	.01	-.02	.07
28.	SA: Non-beneficial private speech composite	.08	-.03	.09	.07	.10	-.15+	-.01
29.	LB: Anger mean	-.02	-.01	-.05	-.05	-.07	.02	.16*
30.	LB: Sadness mean	.10	.12	-.04	.12	.06	.07	.08
31.	CBQ: Anger mean	.05	-.09	-.03	-.01	-.03	-.07	-.05
32.	CBQ: Sadness mean	.08	.12	.08	.12	.13	-.04	-.01
33.	LB: Anger and sadness composite	.06	.08	-.06	.05	-.01	.07	.18*
34.	CBQ: Anger and sadness composite	.08	.01	.02	.06	.05	-.06	-.04
35.	LB and CBQ anger and sadness composite	.10	.07	-.03	.07	.03	.00	.10

(continued)

		15	16	17	18	19	20	21
1.	Age (in months)							
2.	Expressive language ability							
3.	ET: Encourage positive emotion during happy event							
4.	ET: Encourage negative emotion during happy event							
5.	ET: Encourage positive emotion during upset event							
6.	ET: Encourage negative emotion during upset event							
7.	PBACE: Value of positive emotions scale							
8.	PBACE: Value of negative emotions scale							
9.	PBACE: Parents role in guiding children's emotions scale							
10.	ET encourage mean							
11.	PBACE: Encourage mean							
12.	ET encourage mean and PBACE encourage mean composite							
13.	DT: Strategy trial 1							
14.	DT: Strategy trial 2							
15.	DT: Strategy mean							
16.	CBQ: Attention shifting	.03						
17.	CBQ: Inhibitory control	.22**	.51**					
18.	CBQ: Attentional focusing	.17*	.16+	.60**				
19.	CBQ: Effortful control scale	.18*	.71**	.91**	.74**			
20.	DT strategy mean and CBQ effortful control scale and composite	.77**	.48**	.74**	.59**	.77**		
21.	SA: Social speech	-.17*	-.02	-.11	-.09	-.09	-.17*	
22.	SA: Vocalizations	-.07	-.18*	.00	.11	-.03	-.06	.19*
23.	SA: Inaudible muttering	.15+	.08	-.03	-.11	-.03	.07	-.09
24.	SA: Task-irrelevant	-.22**	.00	-.02	-.06	-.03	-.17*	.26**
25.	SA: Negatively valenced task-relevant	-.06	-.07	-.07	-.09	-.09	-.10	.14+
26.	SA: Facilitative task-relevant	.02	-.16*	-.14+	-.07	-.16+	-.09	.04
27.	SA: Beneficial private speech composite	.03	-.15+	-.14+	-.07	-.16+	-.08	.03
28.	SA: Non-beneficial private speech composite	-.09	-.17*	-.06	.02	-.09	-.11	.34**
29.	LB: Anger mean	.11	-.08	-.01	.08	.00	.07	-.21**
30.	LB: Sadness mean	.08	.25**	.17*	.14+	.24**	.21**	.04
31.	CBQ: Anger mean	-.07	-.48**	-.47**	-.30**	-.53**	-.39**	.10
32.	CBQ: Sadness mean	-.03	-.13	-.05	-.03	-.09	-.07	.01
33.	LB: Anger and sadness composite	.15+	.13+	.12	.17*	.18*	.21**	-.13
34.	CBQ: Anger and sadness composite	-.06	-.39**	-.34**	-.22**	-.40**	-.30**	.07
35.	LB and CBQ anger and sadness composite	.06	-.18*	-.15+	-.03	-.15+	-.06	-.04

(continued)

		22	23	24	25	26	27	28
1.	Age (in months)							
2.	Expressive language ability							
3.	ET: Encourage positive emotion during happy event							
4.	ET: Encourage negative emotion during happy event							
5.	ET: Encourage positive emotion during upset event							
6.	ET: Encourage negative emotion during upset event							
7.	PBACE: Value of positive emotions scale							
8.	PBACE: Value of negative emotions scale							
9.	PBACE: Parents role in guiding children's emotions scale							
10.	ET encourage mean							
11.	PBACE: Encourage mean							
12.	ET encourage mean and PBACE encourage mean composite							
13.	DT: Strategy trial 1							
14.	DT: Strategy trial 2							
15.	DT: Strategy mean							
16.	CBQ: Attention shifting							
17.	CBQ: Inhibitory control							
18.	CBQ: Attentional focusing							
19.	CBQ: Effortful control scale							
20.	DT strategy mean and CBQ effortful control scale and composite							
21.	SA: Social speech							
22.	SA: Vocalizations							
23.	SA: Inaudible muttering	.10						
24.	SA: Task-irrelevant	.12	.03					
25.	SA: Negatively valenced task-relevant	.11	.16*	.37**				
26.	SA: Facilitative task-relevant	.33**	.12	-.05	.05			
27.	SA: Beneficial private speech composite	.34**	.21**	-.05	.07	.99**		
28.	SA: Non-beneficial private speech composite	.86**	.18*	.44**	.33**	.36**	.38**	
29.	LB: Anger mean	.06	-.05	-.05	.26**	-.01	-.01	.01
30.	LB: Sadness mean	.03	.16*	.05	.06	-.03	-.02	.03
31.	CBQ: Anger mean	.10	.01	.12	.08	.15+	.15+	.18*
32.	CBQ: Sadness mean	.12	.04	-.01	-.04	.01	.01	.15+
33.	LB: Anger and sadness composite	.07	.08	.00	.24**	-.03	-.02	.03
34.	CBQ: Anger and sadness composite	.13+	.03	.08	.03	.10	.10	.20*
35.	LB and CBQ anger and sadness composite	.14+	.08	.06	.19*	.05	.05	.15

(continued)

		29	30	31	32	33	34	35
1.	Age (in months)							
2.	Expressive language ability							
3.	ET: Encourage positive emotion during happy event							
4.	ET: Encourage negative emotion during happy event							
5.	ET: Encourage positive emotion during upset event							
6.	ET: Encourage negative emotion during upset event							
7.	PBACE: Value of positive emotions scale							
8.	PBACE: Value of negative emotions scale							
9.	PBACE: Parents role in guiding children's emotions scale							
10.	ET encourage mean							
11.	PBACE: Encourage mean							
12.	ET encourage mean and PBACE encourage mean composite							
13.	DT: Strategy trial 1							
14.	DT: Strategy trial 2							
15.	DT: Strategy mean							
16.	CBQ: Attention shifting							
17.	CBQ: Inhibitory control							
18.	CBQ: Attentional focusing							
19.	CBQ: Effortful control scale							
20.	DT strategy mean and CBQ effortful control scale and composite							
21.	SA: Social speech							
22.	SA: Vocalizations							
23.	SA: Inaudible muttering							
24.	SA: Task-irrelevant							
25.	SA: Negatively valenced task-relevant							
26.	SA: Facilitative task-relevant							
27.	SA: Beneficial private speech composite							
28.	SA: Non-beneficial private speech composite							
29.	LB: Anger mean							
30.	LB: Sadness mean	-.14+						
31.	CBQ: Anger mean	.12	-.10					
32.	CBQ: Sadness mean	.08	.06	.36**				
33.	LB: Anger and sadness composite	.66**	.65**	.02	.11			
34.	CBQ: Anger and sadness composite	.12	-.04	.86**	.78**	.07		
35.	LB and CBQ anger and sadness composite	.54**	.42**	.60**	.60**	.73**	.73**	

Notes. $^{+}p < .10$, $*p < .05$, $**p \leq .01$. *Notes*. ET = Emotion talk. PBACE = Parental Beliefs About Coaching Emotions.

DT = Dinky Toys. CBQ = Childhood Behavior Questionnaire. SA = Selective attention. LB = Locked box.

Table 3

Regression Analysis Predicting Children's Negative Emotionality

	Children's Negative Emotionality		
	β	R^2	ΔR^2
1. Children's age	.15^{+}	.03	.03
Children's sex	-.02		
Children's expressive language ability	-.05		
Parental emotion coaching	-.04		
2. Children's effortful control	-.40**	.23	.20**
Children's non-beneficial private speech	.21**		
3. Effortful control x non-beneficial private speech	.15*	.25	.02*
F for model	7.00**		

Notes. $^{+}p < .10$, $*p < .05$, $**p \leq .01$. The betas reported are the standardized betas from the last step.

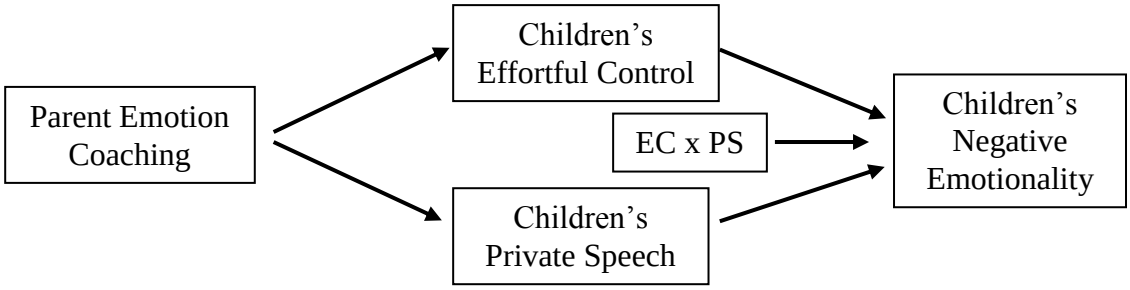

Figure 1. Hypothesized path model.

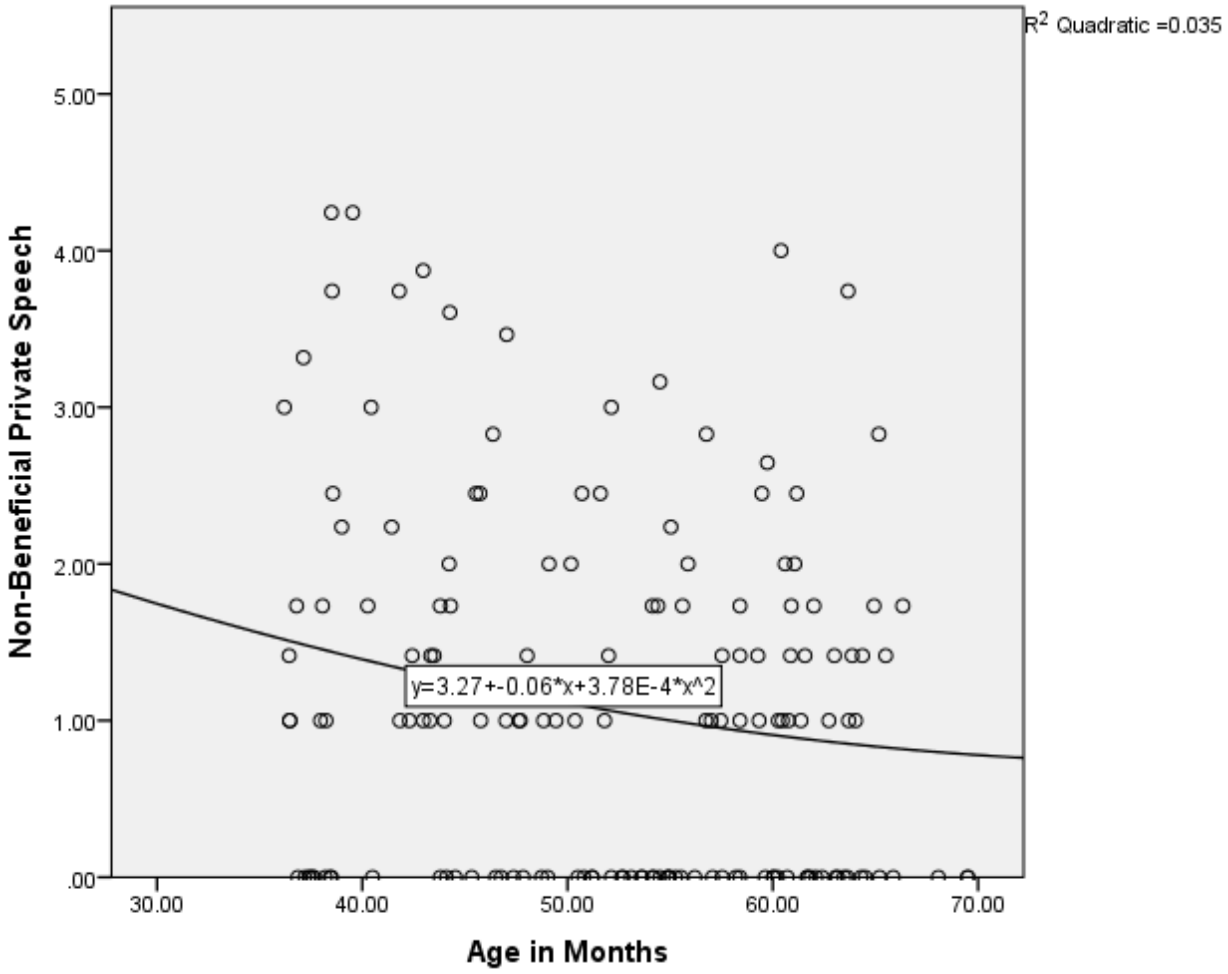

Figure 2. Quadratic best fit line for child age and non-beneficial private speech.

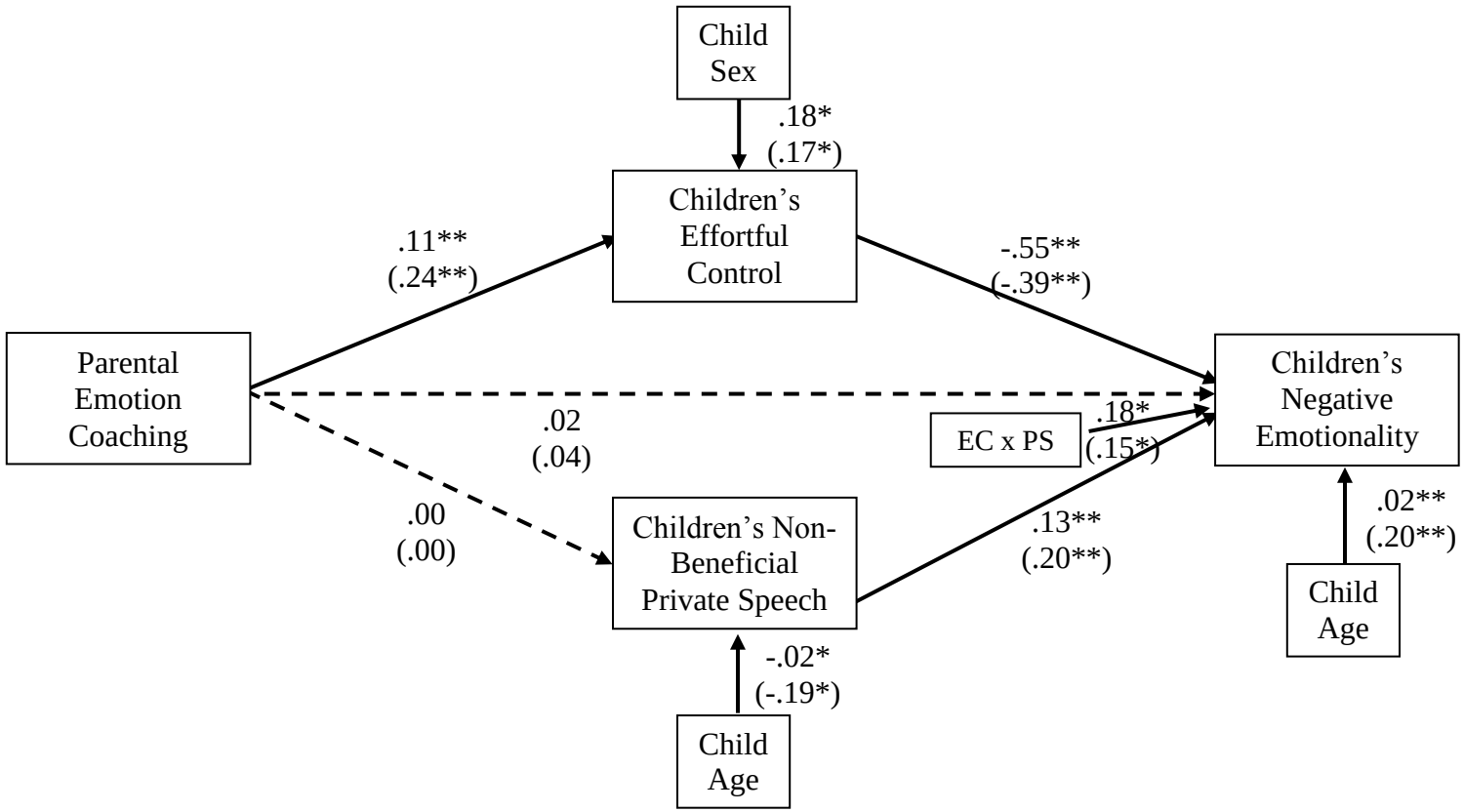

Figure 3. Solid lines indicate significant paths and dotted lines indicate nonsignificant paths. The numbers above the parentheses are unstandardized path coefficients. The numbers inside the parentheses are standardized path coefficients *p < .01, ** p < .05

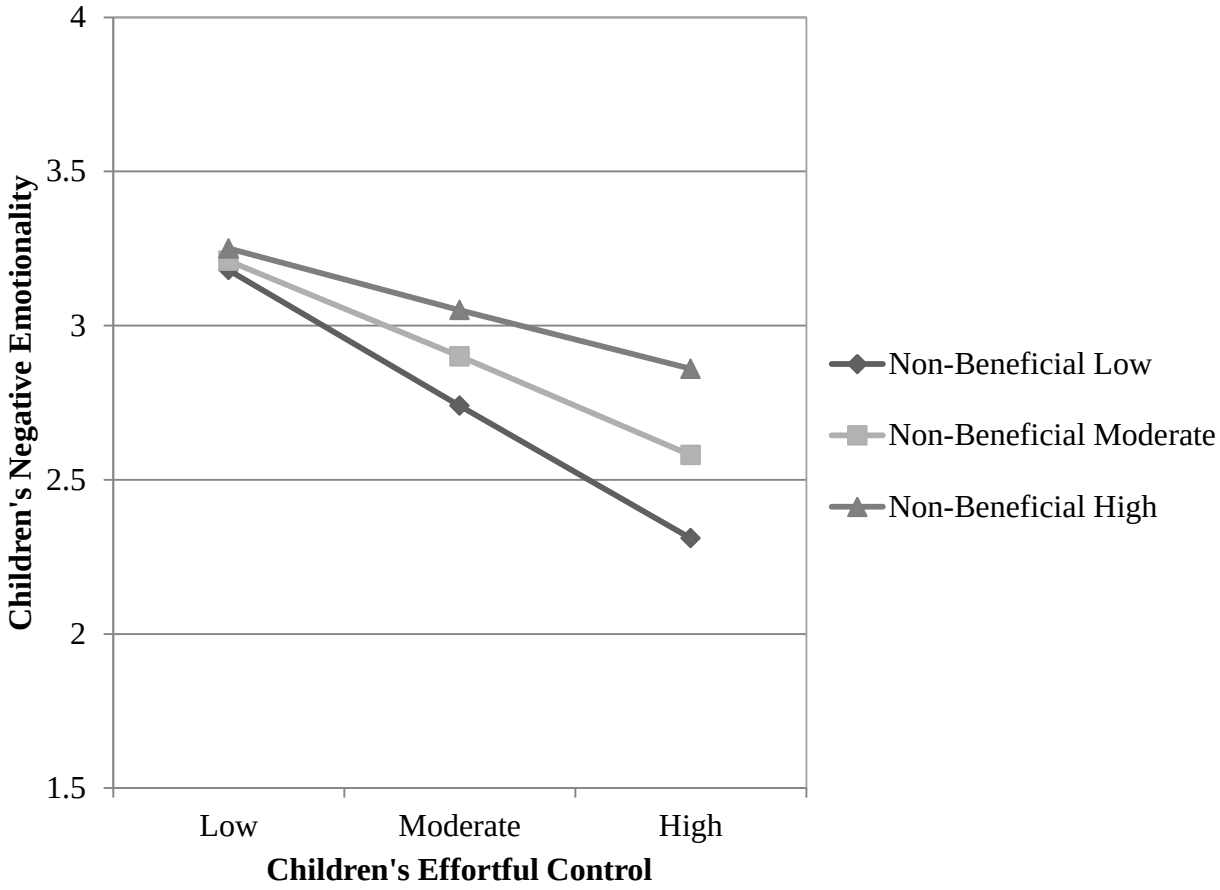

Figure 4. The simple slopes displaying the relation of children's effortful control to children's negative emotionality are shown at three different levels of non-beneficial private speech. The relation of children's effortful control to children's negative emotionality was significant for children who used low, moderate, and high levels of non-beneficial private speech.