

Chapter 9

Considering Individual Differences and Environmental Influences in the Assessment of Temperament, Self-regulation, and Social Skill Development in Young Children: A Framework for Practitioners

Marie C. McGrath, S. Kenneth Thurman, M. Meghan Raisch and Erin M. Lucey

Abstract The purpose of this chapter is to review existing research on the constructs of temperament, self-regulation, and social skills development in young children, and to discuss how these constructs can be assessed in clinical and school settings. Our premise is that, while each can be assessed independently, it is necessary to consider the interrelations and interactions among these characteristics in order to best understand the child's overall functioning. Moreover, the chapter also considers the connections of temperament, self-regulation, and social skills to environmental factors, such as parenting and educational environments. Following this discussion, we present an assessment model that encompasses these constructs and includes transactional influences. Lastly, the chapter provides information regarding specific tools that can be used to assess temperament, self-regulation, and related constructs in young children.

M.C. McGrath (✉)

School Psychology, Immaculata University, Immaculata, PA, USA
e-mail: mmcgrath@immaculata.edu

S. Kenneth Thurman

Special Education, Temple University, Philadelphia, PA, USA
e-mail: sthurman@temple.edu

M. Meghan Raisch

College of Education, Temple University, Philadelphia, PA, USA
e-mail: mraisch@temple.edu

E.M. Lucey

School Psychology Program, Temple University, Philadelphia, PA, USA
e-mail: elucey@temple.edu

Keywords Temperament assessment • Self-regulation in children • Social skills development • Interactional model of temperament and environment • Effortful control • Behavioral inhibition • Parenting styles • Assessment of self-regulation in young children

Introduction

The purpose of this chapter is to review existing research on the constructs of temperament, self-regulation, and social skills development in young children, and to discuss how these constructs can be assessed in clinical and school settings. Our premise is that, while each can be assessed independently, it is necessary to consider the interrelations and interactions among these characteristics in order to best understand the child's overall functioning. Moreover, we submit that any assessment of these characteristics must also include consideration of environmental factors, and assessment of how the child's temperamental characteristics, self-regulation abilities, and social skills are affected by these factors. Before proceeding to examine these interrelationships, however, it is necessary to provide some understanding of each of these constructs and the role each plays in development. We will conclude by describing an assessment model that encompasses these ideas and discussing how specific assessment tools can be used to implement this model.

Literature Review

Temperament: A Brief Summary of Theories and Research

Rothbart and Jones (1998) define *temperament* as “[referring] to the relative strength of children’s emotional reactions and related behaviors as well as their capacities for self-regulation” (p. 480). It is generally acknowledged (cf., Rothbart & Bates, 2008) that the term originated from Michael Rutter in response to the pioneering work of Thomas, Chess, Birch, Hertzig, and Korn (1963), who identified a number of characteristics of infants that can be used to describe their behavioral styles. It might be said that these early researchers focused on the “how” of behavior, or the child’s patterns of responding to various stimuli in the environment. Their data led Thomas and colleagues to identify a number of dimensions of temperament that can be seen as individual aspects of *how* a child responds to his/her environment. These include: (a) *Activity Level*, involving the frequency and intensity of a child’s motor behavior; (b) *Attention Span/Persistence*, or the duration and quality of the child’s attention to tasks; (c) *Distractibility*, or the degree to which environmental factors impact persistence; (d) *Approach/Withdrawal*, or the

child's response when new people or objects are introduced into the child's environment; (e) *Mood*, including the balance between positive and negative moods and mood-related behaviors displayed by the child; (f) *Threshold*, or the level of stimulation required to evoke a response from the child; (g) *Intensity of Reaction*, assessed separately from the valence (i.e., positive or negative) of the reaction; and *Rhythmicity*, pertaining to the regularity of biologically-driven behaviors such as eating, sleeping and elimination.

More recently, Rothbart and Bates (2006) extended this work, using factor analytic techniques to develop a more parsimonious model that includes a somewhat different set of infant temperament dimensions: *Negative Affectivity*, *Extraversion/Surgency*, and *Effortful Control*. Rothbart (2007) noted that several of the dimensions identified by Rothbart and Bates align well with the "Big Five" personality traits (e.g., the Big Five trait of Neuroticism aligns with their construct of Negative Affectivity; Conscientiousness aligns with Effortful Control). Rothbart also posited that temperament can be described along two major domains: *Reactivity*, or the speed and intensity with which a child responds to environmental stimuli, and *Self-regulation*, or the child's ability to control reactions to environmental stimuli.

According to Henderson and Wachs (2007), early evidence suggested that temperament was heavily influenced by genetics and remained relatively stable over time. Indeed, there is a compelling and growing evidence base indicating that genetics play a significant role in temperament (e.g., Davies, Cicchetti, Hentges, & Sturge-Apple, 2013; Schmidt, Fox, Perez-Edgar, & Hamer, 2009), though environmental factors also come into play. However, this view of temperament has since shifted, leading Henderson and Wachs to assert that, "[g]iven [the] pattern of [research] findings, it is now more logical to expect only modest stability in temperament across different contexts and over time" (p. 398). Moreover, they posit that "with regard to context, we would expect to find greater stability in child temperament patterns within a given situation than across situations" (p. 399). Thus, it is important to recognize that, while there is relative stability of temperament characteristics in individual children based on genetic precursors, there are, at the same time, environmental and contextual variables that can influence temperamental expression across time (Rispoli, McGoey, Koziol, & Schreiber, 2013). As discussed in the model of temperament proposed at the end of this chapter, temperament assessment by practitioners should consider the reciprocal relationship between temperament and the environmental context in which it occurs.

Self-regulation and Emotional Control

According to Bronson (2000), *self-regulation* can be defined as a child's ability to respond appropriately to his or her environment. Like the construct of temperament, self-regulation is considered to be multidimensional. In addition, self-regulation can be conceptualized as having both cognitive and affective components (McClelland, Ponitz, Messersmith, & Tominey, 2010). Early self-regulation ability has been shown to relate

to children's later social-emotional development and academic achievement (von Suchodoletz, Trommsdorff, Heikamp, Wieber, & Gollwitzer, 2009). As Liew (2012) notes, "to successfully participate in and learn from everyday preschool and kindergarten activities, such as call and response or shared reading, young children need to demonstrate effortful control (i.e., attentional and inhibitory control)" (p. 106).

In addition to the domain of self-regulation, a number of researchers have also delineated the construct of emotional regulation. *Emotional regulation* has been defined by Eisenberg, Champion, and Ma (2004) as "the process of initiating, avoiding, inhibiting, maintaining, or modulating the occurrence, form, intensity, or duration of internal feeling states, emotion-related physiological, attentional processes, motivational states, and/or the behavioral concomitants of emotion in the service of accomplishing affect-related biological or social adaptation or achieving individual goals" (p. 338). Other theorists have defined emotional regulation as the ability to manage the intensity of one's own emotions and being able to apply the knowledge of appropriate displays of emotions within their social exchanges (Garner, 2010). A key component of emotional regulation is *effortful control*, the ability to inhibit a dominant response in order to perform a subdominant response (Simonds, Kieras, Rueda, & Rothbart, 2007). Effortful control involves the use of voluntary attentional, inhibitory, and executive control systems to alter or maintain negative emotional states (Davenport, Yap, Simmons, Sheeber, & Allen, 2011). Research suggests that temperamental characteristics in early childhood lay the groundwork for later development of effortful control. Eisenberg, Smith, and Spinrad (2011) have stressed the importance of effortful control in the development of conscience, empathy, and prosocial behavior as well as social competence and adjustment (see also Liew, 2012). While related to executive function, effortful control is generally conceptualized as a separate and distinct construct. Zhou, Chen, and Main (2012) assert that understanding of self-regulation requires integration of both effortful control and executive function; this conceptualization makes explicit both the temperamental and cognitive aspects of self-regulation.

Although there is less research regarding the development of emotional regulation during infancy, existing studies suggest that there is some degree of continuity as well as change (Crockenberg & Leerkes, 2006; Kagan, Snidman, & Arcus, 1998). During this early period, regulation is modulated through interactions with parents and other caregivers; it involves paying attention to external stimuli and engaging in approach and avoidance behaviors that are more automatic in nature. In toddlerhood, the ongoing maturation of attentional and executive networks in the brain enables children to develop the ability to direct attention to particular stimuli, inhibiting automatic responses in favor of volitional ones with increasing frequency. Nonetheless, caregiver modeling of situationally appropriate emotional expression and coping strategies remains important, as emotional regulation skills develop in context and in light of parenting behaviors and other environmental influences (Calkins, 2004, 2007; Lengua & Kovacs, 2005). In summary, self-control in early childhood tends to be regulated externally; over time, through a variety of interactions and experiences, including biological maturation and exposure to regulatory modeling by caretakers, the child internalizes self-regulatory mechanisms.

Other theory and research has noted the importance of language development to self-regulation and emotional control processes. For example, Cole, Armstrong, and Pemberton (2010) stated that, “[a]lthough relations between linguistic and self-regulation processes likely involve executive processes (e.g., attention control), difficulty in understanding and producing verbal information may make a unique contribution to emotion regulation” (p. 60). Cole et al. also emphasized the importance of self-directed speech, which can assist in the use of executive strategies that help children to regulate emotion. Aro, Eklund, Nurmi, and Poikkeus, (2012) conducted a longitudinal study examining the associations among language, behavioral regulation, and social skills in a sample of preschool- and early elementary-age children. Participants completed a variety of receptive and expressive language tasks at 2.5 and 5 years of age, while their parents provided information on familial risk for language difficulties (e.g., family history of dyslexia) and completed the BASC Rating Scales. Results indicated that social skills at age 8 measured by the BASC were predicted by language skills at age 5; familial risk for language problems did not impact this association. Language skills at age 5 also seemed to play a mediating role in the association between language skills at age 2.5 and social skills at age 8. In addition, participants who had parent-reported difficulties on the BASC Attention Problems, Aggression, and Hyperactivity subscales and difficulty with completing language tasks, especially receptive language, showed lower adaptability ratings at age 8 than participants, with or without language difficulties, who had no behavioral difficulties.

Relationships Among Temperament, Self-regulation, and Social Skills

The term *social skills* comprises a number of subordinate constructs, including cooperation, empathy, altruism, popularity, and social competence. The development of social skills is related to a variety of temperamental characteristics and to effortful control. For example, in a sample of children ranging in age from 4.5 to 8 years, Valiente et al. (2004) found that effortful control was a significant predictor of empathy responses. Berger (2011) related both effortful control and empathy to executive functioning, noting that “the relation between [effortful control] and empathy is in line, from a developmental perspective, with the coincidence in age between the maturation of [effortful control] and theory of mind, and with findings showing a positive correlation between them and children; that is, preschool children showing higher levels of [effortful control] also tend to do better on tests tapping theory of mind” (p. 101). In a longitudinal study of children’s emotional regulation and social competencies, Spinrad et al. (2006) also found that effortful control was related to later social competence in children. Moreover, results of several studies have suggested that effortful control plays a role in children’s development of conscience (e.g., Kochanska, Murray, Jacques, Koenig, & Vandegest, 1996; Kochanska, Murray, & Coy, 1997; Kochanska, Murray, & Harlan, 2000).

Sanson et al. (2009) examined the relationships among early temperament characteristics and later social, behavioral, and academic difficulties using data from 2443 child participants in the Australian Temperament Project. Using cluster analysis, they identified groups of children with four different temperamental profiles: reactive/inhibited, nonreactive/outgoing, high attention regulation and poor attention regulation. Sanson et al. (2009) found significant differences among these groups in behavior problems, social skills, and school functioning. More specifically, children in the reactive/inhibited and poor attention regulation groups tended to show more behavior problems and weaker social skills and school functioning than children in the nonreactive/outgoing and high attention regulation groups. Furthermore, in longitudinal analyses, Sanson et al. found that, at 7–8 years of age, parents of children in these groups reported higher levels of aggression and hyperactivity than parents of children in the nonreactive/outgoing group. Similarly, at 11–12 years of age, children in the low attention regulation and reactive/inhibited groups were rated as having more behavioral problems across all areas; the latter group was also rated as having the poorest social skills. These results provide evidence that early temperament characteristics continue to play a role shaping children's social-emotional functioning over time.

Other studies have shown that early temperamental characteristics of the child are predictive of later self-regulation. This includes the work of Houck (1999), who found that temperamental difficulties in later infancy were related to lower social competence at 36 months as measured by the Adaptive Social Behavior Inventory (ASBI). Kochanska and Aksan (2006) examined the relationship between fearfulness and effortful control and found that “children's effortful control predicts their internalized conduct both concurrently and longitudinally from toddler age to early school age” (pp. 1600–1). They also found that fearfulness predicted internalized conduct, and that anxious arousal might act as a mediator linking fearfulness to behavior. In another study, Wilson (2006) examined the temperament characteristics of shyness, fearfulness and impulsivity and play behavior strategies in two groups of kindergarten and first-grade children, one rated as aggressive/rejected in status and the other as non-aggressive/popular. She found that higher levels of impulsivity predicted inappropriate play entry strategies (e.g., being demanding or disruptive). Wilson also found that higher shyness and fearfulness predicted the use of socially appropriate entry strategies, such as moving closer without being disruptive and offering help. The results indicated that, although higher levels of fearfulness are often linked to behavioral inhibition, fear may play a more complex role in children's responses to play and other social situations. For example, children who have greater fearfulness might be able to respond in a more adaptable manner to fear-eliciting events as they develop, as suggested by Rothbart, Ellis, Rueda, and Posner (2003).

Ursache, Blair, Stifter, and Voegtline (2013) examined the observed emotional reactivity and regulation of 1292 children from mostly low-SES communities at 7, 15, and 24 months. Parents completed an executive functioning measure when their children were 48 months of age. The researchers found that infants who displayed high levels of both emotional reactivity and emotional regulation showed high

levels of executive functioning as preschoolers. In contrast, children with high levels of emotional reactivity, but low levels of emotional regulation, showed lower levels of executive functioning skills in preschool. They also found that children in the former group were more likely to have parents that used positive parenting practices than were children in the latter group.

While this chapter focuses on young children, the importance of understanding temperament and self-regulation remains pertinent throughout the lifespan, as research suggests these factors might influence social functioning into adulthood. Several longitudinal studies have examined the relationships between temperamental characteristics at age 3 and functioning across social contexts in adulthood (i.e., at home, at work, in one's social network, and in romantic relationships). Newman, Caspi, Moffitt, and Silva (1997) found that children who were well-adjusted, reserved, and/or confident at age 3 generally functioned typically in all domains at age 21; children who were inhibited at age 3 had weaker affiliations within their social networks at age 21, but functioned typically at work and in romantic relationships; and children who were temperamentally under-controlled at age 3 demonstrated difficulties across all social domains at age 21. In more recent research, Rudasill, Reio, Stipanovic, and Taylor (2010) found that, in a sample of about 1100 children from the NICHD Study of Early Child Care and Youth Development, those with more difficult temperaments were more likely to report risky behaviors and to have conflictual relationships with teachers in adolescence.

Impact of Environmental Factors

Environment, temperament, and self-regulation: The impact of parenting.

While it is clear that early temperament contributes to a variety of social-emotional outcomes for children, research also shows that temperament characteristics interact with parenting behaviors and characteristics to affect a variety of outcomes. A number of researchers have linked the development of self-regulation and emotional regulation skills to early attachment and/or parenting styles and practices. From birth through adolescence, parent responsiveness and support strongly predict development of emotional regulation skills and effortful attention control (Eisenberg, Spinrad, & Eggum 2010). During the preschool years, parental warmth and empathy, coupled with a gradual shift from direct regulatory behavior and toward increasingly indirect behavioral guidance, predicts later self-regulatory behavior in children (e.g., Houck & Lecuyer-Maus, 2004; Spinrad et al., 2004). In other words, authoritative parenting styles (Baumrind & Black, 1967) best predict good self-regulation skills in children, while permissive and authoritarian parenting styles can prevent children from having the opportunity to practice these behaviors due to lack of input and modeling or lack of autonomy. In a study which considered

these parenting behaviors in relation to young children's self-regulation, Calkins and Johnson (1998) focused on reaction to distress in the context of mother-toddler dyads. They found that, in dyads where mothers completed tasks for their children rather than letting the children do it themselves, toddlers were more likely to become distressed in response to a distracting task. The researchers noted that this result could be attributable to other factors, such as mothers anticipating frustration in children more prone to distress and intervening prior to the onset of distressed behavior.

Other research has focused on the characteristic of behavioral inhibition (BI), which often manifests in infancy or toddlerhood, in combination with parenting. In a longitudinal study, Williams et al. (2009) found that internalizing problems, such as anxiety, were highest in children with high BI who also experienced permissive parenting. Over time, higher levels of authoritative parenting were associated with less of an increase in internalizing problems. Surprisingly, this study showed that authoritarian parenting did have some positive effects, in that it was associated with greater decreases in externalizing problems as children became older. Cornell and Frick (2007) also looked at BI, specifically children who were both overly and under-inhibited, in combination with parenting practices. Results indicated that children who were high in BI were parent-rated as having more empathy and guilt regardless of type of parental discipline/practices in comparison to children who were low on inhibition. Children with low inhibition demonstrated different patterns, in that they were rated as lower on guilt and empathy when they experienced inconsistent discipline, but higher on guilt when they experienced authoritarian parenting.

Bradley and Corwyn (2008) found that the combination of difficult temperament in infancy and parenting characterized by low sensitivity or fewer opportunities for constructive activity resulted in higher levels of behavior problems in first grade as compared to children with average or easy temperaments. Kochanska and Kim (2013) looked at the characteristics of effortful control and anger proneness in two- and three-year old children in combination with maternal responsiveness. They found that children who were low in effortful control and high on anger proneness at age 30 months and were parented by highly responsive mothers showed more compliance and lower levels of externalizing problems at age 40 months, whereas children with the same pattern of traits who were parented by non-responsive mothers showed less compliance and greater levels of externalizing problems. Similarly, Yaman, Mesman, van IJzendoorn, and Bakermans-Kranenburg (2010) studied young children with difficult temperaments at age 2 and found that those who experienced low positive parenting showed greater aggression at age 3 in comparison to peers with easy temperaments. However, the difficult children who experienced positive parenting did not show significantly lower aggression in comparison to easy-temperament peers.

Manian, Papadakis, Strauman, and Essex (2006) examined the contribution of parenting behaviors to children's development of two types of self-guides: *ideal* guides, pertaining to aspirational behaviors, and *ought* guides, pertaining to obligatory behaviors or responsibilities in the context of *regulatory focus theory* (RFT;

Higgins, 1997). This model proposes that ideal guides inform behavior that increases the likelihood of positive outcomes, while ought guides lead to behavior that prevents negative outcomes. Manian et al. found that maternal positive affectivity predicted nurturance, which, in turn, positively predicted development of ideal guides. The relationship among affectivity, punishment, control, and ought guide development was more complex. The researchers found that maternal negative affectivity predicted level of maternal control, but that control did not necessarily predict ought guide development; they hypothesized that control may need to co-occur with punishment in order to facilitate development of ought guides. The authors note that development and use of ideal guides in behavioral regulation is often viewed as a more positive outcome than the use of ought guides; however, they also point out that internalizing and having the capacity to independently implement both types of strategies might enable children to respond effectively in a wider variety of situations.

Kochanska and Aksan (2006) noted that increased power assertion by parents leads to less guilt, less mature use of internalized conduct, and/or less moral conduct by children, whereas a mutually responsive orientation (MRO) between parent and child seems to promote later prosocial conduct by increasing cooperative behavior by the child, as well as internalization of rules presented by parents. They noted that, for fearful children, gentle discipline is effective in creating sufficient anxious arousal to promote internalizing behavioral rules and subsequent self-regulation of behavior. However, fearless children do not respond the same way. For these children, it appears that MRO is a more important predictor of internalized conduct. In proposing directions for future research, they suggested that further investigation of the relationships among these constructs in other ecologies besides that of the family unit is important in order to determine how factors such as environmental change affect self-regulation, noting that “[a]n ecological framework will also allow us to ask whether the early temperament [and] relationship interactions that we have found within the family would also be found in other ecologies over the child’s life course” (pp. 1608–9).

Self-regulation and social skills: The impact of educational environments. A number of studies have indicated that children who experience high levels of emotional support, instructional support, and teacher–child closeness in their preschool and early elementary classrooms show better social, behavioral, and self-regulation outcomes than peers in classes with more negative emotional climates (e.g., Mashburn et al., 2008; Perry, Donohue, & Weinstein, 2007; Silver, Measelle, Armstrong, & Essex, 2005). Merritt, Wanless, Rimm-Kaufman, Cameron, and Peugh (2012) examined the relationship between emotionally supportive teacher–child interactions in first-grade classrooms and social and self-regulatory outcomes for children. They found that emotionally supportive behavior by first-grade teachers predicted lower levels of aggressive behavior and higher levels of self-control at the end of the first-grade year. In a study of children’s engagement in kindergarten and first grade, Cadima, Doumen, Verschueren, and Buyse (2015) found that temperament, as well as teacher relationship variables, predicted positive involvement. More specifically, good inhibitory control, closer

teacher–child relationships, and lower perceived teacher–child conflict were associated with good engagement in kindergarten, while these same variables in combination with well-organized first-grade classrooms were associated with positive engagement in first grade.

With respect to interaction between teacher variables and child risk variables, few studies have been conducted. Merritt et al. (2012) found no interaction between emotional support levels and sociodemographic risk factors (e.g., low maternal education, low family income); emotional support predicted similarly positive outcomes for children of all sociodemographic risk levels in their sample. However, other studies (e.g., Hamre & Pianta, 2005) have found that emotionally supportive classrooms are particularly important for children who have a number of sociodemographic risk factors.

In terms of specific educational programming in preschools, the PATHS curriculum (Domitrovich, Greenberg, Kusché, & Cortes, 2005) has demonstrated efficacy in randomized clinical trials. PATHS consists of 44 sessions that focus on development of: self-regulation skills; recognition and communication about emotions in self and others; and social-cognitive abilities that foster prosocial conduct and positive relationships with peers (Moore et al., 2015). PATHS not only involves direct instruction in the above areas, but also helps train teachers to develop positive classroom climates. Research has indicated that PATHS can generate a number of positive social-emotional outcomes for children, including those enrolled in Head Start (Domitrovich, Cortes, & Greenberg, 2007; Morris et al., 2014).

Rothbart and Jones (1998) noted that, while individual differences in temperament across individuals will impact goodness-of-fit between those children and classroom environments, certain aspects of temperament are likely to consistently impact children's performance in class; for example, they noted that experiencing punishment or failure can lead to avoidant, inhibited, defensive, or frustrated behavior for children regardless of specific temperamental features (see our discussion of environmental contingencies below). Rothbart and Jones identified negative emotionality, approach/positive affect, attentional persistence/effortful control, and activity level as important dimensions to be considered by teachers. Activity and approach/positive affect can be classified under the single category of surgency/extraversion. Under the category of negative emotionality, tendencies toward fear and irritability can interfere with performance on frustrating or anxiety-provoking tasks. Different children with different temperaments will process what is ostensibly the same classroom environment in different ways. However, all children have to deal with adult-directed activity for most of the school day. Rothbart and Jones thus noted that, while positive affect and approach seem to be linked to development of intrinsic, mastery-oriented motivation in school-age children, the ability to respond to extrinsic motivators, standards, and goals is also an important skill. They recommend a multidimensional approach to temperament-related assessment including: obtaining information from parents/caregivers; using measures such as the Children's Behavior Questionnaire

(CBQ; Rothbart, Ahadi, Hershey, & Fisher, 2001); assessing classroom environment; and remaining mindful of the impact of anxiety, inattention, and other temperament-linked traits that might interfere with performance.

Interactional Model of Temperament and Environmental Context

It is clear from the above discussion that successful social-emotional functioning is closely tied to the interrelationships and interactions of individual child characteristics with the surrounding environment. While the literature clearly suggests that children might be constitutionally predisposed to behave in certain ways, it is also clear that environmental factors contribute to children's self and emotional regulation, social skills and other primary areas of functioning. As previously noted, parents' responses to children's temperamental characteristics can affect later behavior. As pointed out by Guerin, Gottfried, and Thomas (1997), "if parents respond to children's difficult temperament in ways that make it difficult for them to adapt, 'poorness-of-fit' results, and the probability that a [behavior] problem will develop increases" (p. 86). Similarly, Feldman and colleagues (Feldman, 2007; Feldman, Greenbaum, & Yirmiya, 1999) have presented data suggesting that affective synchrony or attunement (i.e., the mother's and infant's mutual self-regulation) within the first year of life has been found to predict self-regulation later in childhood. Based on these findings, assessment of parental characteristics, as well as the degree of fit between parents and children, will provide valuable information that enhances understanding of children's behavior. One way to accomplish this is to specifically examine contingencies that are present in the child's environment and the social expectations to which the child is exposed.

Environmental contingencies. All children are exposed to environmental reinforcers and punishers. These environmental contingencies directly influence how children behave and, thus, are important factors to understand if we are to meaningfully assess children's social-emotional functioning. As an example, suppose that Ellis is a child who is temperamentally predisposed to be very reactive to his environment, but his parents value a calmer and more reflective way of responding. Thus, when Ellis behaves in an overly reactive manner, his parents tend to respond sternly. This punishing consequence inhibits Ellis's natural tendency to be reactive and might lead to more self-regulatory behavior on his part, particularly if his parents reinforce him for less reactive responding. In contrast, when at school, Ellis is seen by his teachers as a child who is enthusiastic and responsive to his learning environment; his reactive behaviors are reinforced, rather than punished. Because the contingency structure at school differs significantly from that at home, his patterns of self-regulation and expressed temperamental characteristics might differ across settings. Without assessing the different contingency structures to which children are exposed, we cannot fully understand their behaviors across contexts.

Expectations. Like contingencies, expectations are an integral aspect of any environment, and provide important setting events for children's behavior. Expectations might reflect cultural and societal norms as well as the belief systems of parents and teachers. Children learn to behave in accordance with environmental expectations, and, in doing so, are reinforced for behaviors that are deemed socially desirable. In Ellis's case, his parents and teachers show different expectations regarding his reactivity; in each environment, he is reinforced for acting in accordance with their expectations, resulting in behavioral variability across environments.

In short, treating clinicians who fail to gather information that addresses the contingencies and expectations in children's environments are likely to overlook and/or misunderstand key factors related to children's temperament, self-regulation, and social skills. It is also important to consider the reciprocal influences between children's individual characteristics and their environments. In order to develop effective interventions, we need to understand not only the individual characteristics of the child, and the expectations and contingencies of their environments, but also how these interact with and transform each other across time. Figure 9.1 illustrates the interrelationships among environmental variables, such as expectations and contingency structures, and individual variables, such as temperament, self-regulation, and the expression of social skills. It is hoped that this framework will be useful to practitioners who engage in assessment of social and emotional functioning in young children.

Implications for Practice

Assessment

The preceding literature review indicates that temperament, self-regulation skills, and social competence build upon each other, and that assessment of temperament and self-regulatory skills in infants, toddlers, and preschoolers can be used to predict later competencies. Additionally, environmental factors, including parenting styles and practices, teacher attributes/practices, and classroom ecology can impact each of the above constructs and, thus, create change in the developmental trajectories that link them. Finally, a number of studies have suggested that language and executive functioning abilities are also related to the development of appropriate self-regulatory and social skills. This suggests that, when assessing young children, practitioners should gather data on their temperament characteristics, self-regulatory skills, and social behaviors; examine the interactions between their individual characteristics and home and school environments; and consider other cognitive and linguistic factors that might contribute to successful functioning in these domains. In doing these assessments, however, it is also necessary to consider the contextual and transactional nature of development and how various environmental influences contribute to the manifestation of temperament, self-regulation, and, ultimately, social skills outcomes in young children. The table below summarizes tools and resources that are potentially useful to practitioners in assessing the constructs described above. This list is not intended to be

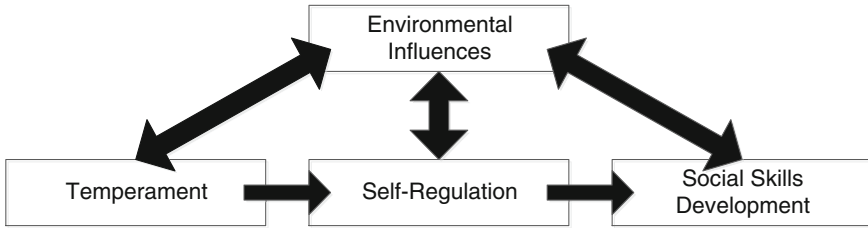


Fig. 9.1 Assumed relationships among environment, temperament, self-regulation, and social skill development

exhaustive; many other relevant instruments and/or techniques can be found in the peer-reviewed literature or purchased from test publishing companies. Additionally, while the instruments and assessment techniques listed in this table are empirically supported and/or are psychometrically adequate, they might not be appropriate for use with all individuals and/or populations.

Temperament Assessment

Name of assessment	Author(s) and dates	Age range	# of items	Format
Infant Behavior Questionnaire-Revised (IBQ-R)	Gartstein and Rothbart (2003)	3–12 months	191 items	Caregiver questionnaire
Early Childhood Behavior Questionnaire (ECBQ)	Putnam, Gartstein, and Rothbart (2006)	18–36 months	144 items	Caregiver questionnaire
ASEBA, preschool forms (CBCL-1 1/2-5 and C-TRF)	Achenbach and Rescorla (2000)	18 months–5 years	100 items	Caregiver questionnaire, teacher report
Toddler Behavior Assessment Questionnaire (TBAQ)	Goldsmith (1996)	18–38 months	108 items	Caregiver questionnaire

Self-regulation Assessment

Name of assessment	Author(s) and dates	Age range	# of Items	Format
Head-Toes-Knees-Shoulders (HTKS)	Ponitz, McClelland, Matthews, and Morrison (2009)	4–6 years	20 items	Structured behavioral observation

(continued)

(continued)

Name of assessment	Author(s) and dates	Age range	# of Items	Format
Children's Behavior Questionnaire (CBQ)	Rothbart et al. (2001)	3–7 years	195 items (standard form) 94 items (short form) 36 items (very short form)	Caregiver questionnaire
Peg Tapping	Diamond and Taylor (1996)	3–7 years	16 items	Structured behavioral observation

Executive Functioning Assessment

Name of assessment	Author(s) and dates	Age range	# of Items	Format
Behavior Rating Inventory of Executive Function (BRIEF)	Gioia, Isquith, Guy, and Kenworthy (2000)	5–18 years	86 items	Caregiver questionnaire, teacher questionnaire
Behavior Rating Inventory of Executive Function, Preschool version (BRIEF-P)	Gioia, Espy, and Isquith (2003)	2–6 years	63 items	Caregiver questionnaire, teacher/day care provider questionnaire
Comprehensive Executive Function Inventory (CEFI)	Naglieri and Goldstein (2013)	5–18 years	100 items	Parent questionnaire, teacher questionnaire, self-report (12–18 years)
NEPSY-II	Brooks, Sherman, and Strauss (2009)	3–16 years	32 subtests	Neuropsychological battery

The importance of authentic and ecologically valid assessment has been emphasized as it pertains to the assessment of literacy in young children (Thurman & McGrath, 2008); cognitive skills in general (Thurman & Kiepert, 2008); and working memory in particular (Levin, Thurman, & Kiepert, 2010). Ecological validity is equally important

to consider when assessing self-regulation and social skills. As Thurman and Kiepert (2008) assert, “using data gathered from the natural environment to assess various aspects of [psychological] functioning significantly enhances the ecological validity of the constructs under [consideration]” (p. 270). They elaborate on this idea by suggesting that “the ‘artificial’ demands required by an assessment tool must be reflective of the everyday environmental demands [experienced by] children” (p. 271). Assessment of environmental demands is a necessary prerequisite for understanding the impact of environmental variables on the expression of temperament in children, as well as the effects of context on self-regulation and the skills required for effective social interaction and problem solving. While a number of the assessment tools listed above have been shown to be useful in the assessment of temperament, self-regulation, and social skills, practitioners are advised to increase the authenticity and ecological validity of their assessments by supplementing these measures with observations in natural environments and by conducting interviews with parents, teachers and other relevant individuals who can provide insight into the child’s “real life” functioning.

Case Study

Rowena is a 6 year old first grader who lives in a middle-class neighborhood with her parents and two older brothers (ages 9 and 11). As an infant and toddler, Rowena tended to be quiet and shy. She typically had difficulty transitioning between activities and with changes in her environment and routine. In contrast, her brothers have always been socially adept and flexible. Rowena’s parents value social interaction and have been puzzled by their daughter’s difficulties in this area. In her preschool classroom, Rowena gained pre-academic and school readiness skills quickly, but did not initiate interactions or appear to form relationships with other children. This pattern continued in kindergarten. Now, in first grade, Rowena will often isolate herself from other children. Her teacher expects students to work together and structures many classroom activities around social interaction. Rowena rarely spontaneously initiates verbal interactions with others and remains reluctant to do so, even when directly prompted by her teacher. She generally does not raise her hand or contribute during group activities or discussions. In social situations, she often shows overt signs of anxiety, and will cry easily if social demands are placed on her. Rowena does this so frequently that the other children have begun to tease her, which appears to exacerbate her anxiety.

Rowena’s desk is always well-organized, and she prides herself in being neat. She is compliant when asked to complete assignments, but struggles with variation in the classroom routine (e.g., school assemblies, substitute teachers). At home, she willingly helps with chores, in contrast to her brothers, who complain and resist helping out. When her parents suggest that Rowena invite a friend over, she quickly changes the subject or states that she does not like anybody in her class. At a recent parent–teacher conference, Rowena’s parents expressed concerns about her

apparent anxiety in social situations and her lack of friendships with children in her class. Rowena's parents and teacher concluded that it would be a good idea to gather some additional information.

Discussion Questions

Using the model presented earlier in this chapter and the information provided above, think about the following questions:

- What information in the case study is most pertinent?
- What other types of information would you want to gather?
- How might Rowena's current classroom placement and her teacher's expectations impact her social skill development?
- Is Rowena's current classroom placement being responsive to her temperamental characteristics?
- What characteristics of Rowena's family are most relevant in understanding her functioning?
- Do you think that Rowena might be a candidate for special education or other supportive services in the school setting? Why or why not?
- What advice would you have for Rowena's teacher and parents?

References

- Achenbach, T. M., & Rescorla, L. A. (2000). *Manual for the ASEBA preschool forms and profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth & Families.
- Aro, T., Eklund, K., Nurmi, J., & Poikkeus, A. (2012). Early language and behavioral regulation skills as predictors of social outcomes. *Journal of Speech, Language, and Hearing Research*, 55, 395–408.
- Baumrind, D., & Black, A. E. (1967). Socialization practices associated with dimensions of competence in preschool boys and girls. *Child Development*, 38, 291–327.
- Berger, A. (2011). *Self-regulation: Brain, cognition, and development*. Washington, DC: American Psychological Association.
- Bradley, R. H., & Corwyn, R. F. (2008). Infant temperament, parenting, and externalizing behavior in first grade: A test of the differential susceptibility hypothesis. *Journal of Child Psychology and Psychiatry*, 49(2), 124–131.
- Bronson, M. B. (2000). *Self-regulation in early childhood: Nature and nurture*. New York, NY: Guilford Press.
- Brooks, B. L., Sherman, E. M., & Strauss, E. (2009). NEPSY-II: A developmental neuropsychological assessment. *Child Neuropsychology*, 16(1), 80–101.
- Cadima, J., Doumen, S., Verschueren, K., & Buyse, E. (2015). Child engagement in the transition to school: Contributions of self-regulation, teacher-child relationships and classroom climate. *Early Childhood Research Quarterly*, 32, 1–12.
- Calkins, S. D. (2004). Early attachment process and the development of self-regulation. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation: Research, theory, and applications* (pp. 324–339). New York, NY: Guilford Press.

- Calkins, S. D. (2007). The emergence of self-regulation: Biological and behavioral control mechanisms supporting toddler competencies. In C. A. Brownell & C. B. Kopp (Eds.), *Socioemotional development in the toddler years: Transitions and transformations* (pp. 261–284). New York, NY: Guilford Press.
- Calkins, S. D., & Johnson, M. C. (1998). Toddler regulation of distress to frustrating events: Temperamental and maternal correlates. *Infant Behavior and Development, 21*, 379–395.
- Cole, P. M., Armstrong, L. M., & Pemberton, C. K. (2010). The role of language in the development of emotion regulation. In S. D. Calkins & M. A. Bell (Eds.), *Child development at the interface of emotion and cognition* (pp. 59–77). Washington, DC: American Psychological Association.
- Cornell, A. H., & Frick, P. J. (2007). The moderating effects of parenting styles in the association between behavioral inhibition and parent-reported guilt and empathy in preschool children. *Journal of Clinical Child and Adolescent Psychology, 36*(3), 305–318.
- Crockenberg, S. C., & Leerkes, E. M. (2006). Infant and maternal behavior moderate reactivity to novelty to predict anxious behavior at 2.5 years. *Development and Psychopathology, 18*, 17–34. doi: [10.1017/S0954579406060020](https://doi.org/10.1017/S0954579406060020)
- Davenport, E., Yap, M. B. H., Simmons, J. G., Sheeber, L. B., & Allen, N. B. (2011). Maternal and adolescent temperament as predictors of maternal affective behavior during mother-adolescent interactions. *Journal of Adolescence, 34*, 829–883.
- Davies, P. T., Cicchetti, D., Hentges, R. F., & Sturge-Apple, M. L. (2013). The genetic precursors and the advantageous and disadvantageous sequelae of inhibited temperament: An evolutionary perspective. *Developmental Psychology, 49*(12), 2285–2300. doi: [10.1037/a0032312](https://doi.org/10.1037/a0032312)
- Diamond, A., & Taylor, C. (1996). Development of an aspect of executive control: Development of the abilities to remember what I said and to “Do as I say, not as I do”. *Developmental Psychobiology, 29*, 315–334.
- Domitrovich, C. E., Cortes, R. C., & Greenberg, M. T. (2007). Improving young children’s social and emotional competence: A randomized trial of the preschool “PATHS” curriculum. *Journal of Primary Prevention, 28*(2), 67–91.
- Domitrovich, C. E., Greenberg, M. T., Kusché, C., & Cortes, R. (2005). *The preschool PATHS curriculum*. South Dearfield, MA: Channing Bete Publishing Company.
- Eisenberg, N., Champion, C., & Ma, Y. (2004). Emotion regulation: An emerging construct. *Merrill-Palmer Quarterly, 50*, 236–259.
- Eisenberg, N., Smith, C. L., & Spinrad, T. L. (2011). Effortful control: Relations with emotion regulation, adjustment, and socialization in childhood. In K. D. Vohs & R. F. Baumeister (Eds.), *Handbook of self-regulation: Research, theory, and applications* (2nd ed., pp. 263–283). New York, NY: Guilford Press.
- Eisenberg, N., Spinrad, T. L., & Eggum, N. D. (2010). Emotion-related self-regulation and its relation to children’s maladjustment. *Annual Review of Clinical Psychology, 6*, 495–525.
- Feldman, R. (2007). Parent-infant synchrony biological foundations and developmental outcomes. *Current Directions in Psychological Science, 16*, 340–345.
- Feldman, R., Greenbaum, C. W., & Yirmiya, N. (1999). Mother-infant affect synchrony as an antecedent of the emergence of self-control. *Developmental Psychology, 35*, 223–231.
- Garner, P. W. (2010). Emotional competence and its influences on teaching and learning. *Educational Psychology Review, 22*, 297–321.
- Gartstein, M. A., & Rothbart, M. K. (2003). Studying infant temperament via the revised infant behavior questionnaire. *Infant Behavior and Development, 26*, 64–86.
- Gioia, G. A., Espy, K. A., & Isquith, P. K. (2003). *Behavior Rating Inventory of Executive Function, Preschool Version (BRIEF-P)*. Lutz, FL: Psychological Assessment Resources.
- Gioia, G. A., Isquith, P. K., Guy, S. C., & Kenworthy, L. (2000). Test review Behavior Rating Inventory of Executive Function. *Child Neuropsychology, 6*, 235–238.
- Goldsmith, H. H. (1996). Studying temperament via construction of the Toddler Behavior Assessment Questionnaire. *Child Development, 67*, 218–235.

- Guerin, D. W., Gottfried, A. W., & Thomas, C. W. (1997). Difficult temperament and behaviour problems: A longitudinal study from 1.5 to 12 years. *International Journal of Behavioral Development, 21*, 71–90.
- Hamre, B. K., & Pianta, R. C. (2005). Can instructional and emotional support in the first-grade classroom make a difference for children at risk of school failure? *Child Development, 76*, 949–967.
- Henderson, H. A., & Wachs, T. D. (2007). Temperament theory and the study of cognition-emotion interactions across development. *Developmental Review, 27*, 396–427.
- Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist, 52*, 1280–1300.
- Houck, G. M. (1999). The measurement of child characteristics from infancy to toddlerhood: Temperament, developmental competence, self-concept, and social competence. *Issues in Comprehensive Pediatric Nursing, 22*, 101–127.
- Houck, G. M., & Lecuyer-Maus, E. A. (2004). Maternal limit setting during toddlerhood, delay of gratification, and behavior problems at age five. *Infant Mental Health Journal, 25*, 28–46.
- Kagan, J., Snidman, N., & Arcus, D. (1998). Childhood derivatives of high and low reactivity in infancy. *Child Development, 69*, 1483–1493.
- Kochanska, G., & Aksan, N. (2006). Children's conscience and self-regulation. *Journal of Personality, 74*(6), 1587–1617. doi: [10.1111/j.1467-6494.2006.00421.x](https://doi.org/10.1111/j.1467-6494.2006.00421.x)
- Kochanska, G., & Kim, S. (2013). Difficult temperament moderates links between maternal responsiveness and children's compliance and behavior problems in low-income families. *Journal of Child Psychology and Psychiatry, 54*(3), 323–332.
- Kochanska, G., Murray, K., & Coy, K. C. (1997). Inhibitory control as a contributor to conscience in childhood: From toddler to early school age. *Child Development, 68*, 263–277.
- Kochanska, G., Murray, K., Jacques, T. Y., Koenig, A. L., & Vandegest, K. A. (1996). Inhibitory control in young children and its role in emerging internalization. *Child Development, 67*(2), 490–507.
- Kochanska, G., Murray, K. T., & Harlan, E. T. (2000). Effortful control in early childhood: Continuity and change, antecedents, and implications for social development. *Developmental Psychology, 36*, 220–223.
- Lengua, L. J., & Kovacs, E. A. (2005). Bidirectional associations between temperament and parenting and the prediction of adjustment problems in middle childhood. *Journal of Applied Developmental Psychology, 26*, 21–38.
- Levin, D. S., Thurman, S. K., & Kiepert, M. H. (2010). More than just a memory: The nature and validity of working memory in educational settings. In G. M. Davies & D. B. Wright (Eds.), *Current issues in applied memory research* (pp. 72–95). New York, NY: Psychology Press.
- Liew, J. (2012). Effortful control, executive functions, and education: Bringing self-regulatory and social emotional competencies to the table. *Child Development Perspectives, 6*, 105–111.
- Manian, N., Papadakis, A. A., Strauman, T. J., & Essex, M. J. (2006). The development of children's ideal and ought self-guides: Parenting, temperament, and individual differences in guide strength. *Journal of Personality, 74*, 1619–1645. doi: [10.1111/j.1467-6494.2006.00422.x](https://doi.org/10.1111/j.1467-6494.2006.00422.x)
- Mashburn, A. J., Pianta, R. C., Hamre, B. K., Downer, J. T., Barbarin, O. A., Bryant, D., ... Howes, C. (2008). Measures of classroom quality in prekindergarten and children's development of academic, language, and social skills. *Child Development, 79*, 732–749.
- McClelland, M. M., Ponitz, C. C., Messersmith, E. E., & Tominey, S. (2010). Self-regulation: Integration of cognition and emotion. In W. F. Overton & R. M. Lerner (Eds.), *The Handbook of Life-Span Development: Volume 1. Cognition, biology, and methods* (pp. 509–553). Hoboken, NJ: Wiley.
- Merritt, E. G., Wanless, S. B., Rimm-Kaufman, S. E., Cameron, C., & Peugh, J. L. (2012). The contributions of teachers' emotional support to children's social behaviors and self-regulatory skills in first grade. *School Psychology Review, 41*, 141–159.
- Moore, J. E., Cooper, B. R., Domitrovich, C. E., Morgan, N. R., Cleveland, M. J., Shah, H., ... Greenberg, M. T. (2015). The effects of exposure to an enhanced preschool program on the social-emotional functioning of at-risk children. *Early Childhood Research Quarterly, 32*, 127–138.

- Morris, P., Mattera, S. K., Castells, N., Bangser, M., Bierman, K., & Raver, C. (2014). *Impact findings from the head start cares demonstration: National evaluation of three approaches to improving preschoolers' social and emotional competence*. OPREReport 2014-44. Washington, DC: Office of Planning, Research and Evaluation Administration for Children and Families, U.S. Department of Health and Human Services
- Naglieri, J. A., & Goldstein, S. (2013). *Comprehensive Executive Function Inventory (CEFI)*. North Tonawanda, NY: Multi-Health Systems.
- Newman, D. L., Caspi, A., Moffitt, T. E., & Silva, P. A. (1997). Antecedents of adult interpersonal functioning: Effects of individual differences in age 3 temperament. *Developmental Psychology*, 33(2), 206–217.
- Perry, K. E., Donohue, K. M., & Weinstein, R. S. (2007). Teaching practices and the promotion of achievement and adjustment in first grade. *Journal of School Psychology*, 45, 269–292.
- Ponitz, C. C., McClelland, M. M., Matthews, J. S., & Morrison, F. J. (2009). A structured observation of behavioral self-regulation and its contribution to kindergarten outcomes. *Developmental Psychology*, 45, 605.
- Putnam, S. P., Gartstein, M. A., & Rothbart, M. K. (2006). Measurement of fine-grained aspects of toddler temperament: The early childhood behavior questionnaire. *Infant Behavior and Development*, 29, 386–401.
- Rispoli, K. M., McGoey, K. E., Koziol, N. A., & Schreiber, J. B. (2013). The relation of parenting, child temperament, and attachment security in early childhood to social competence at school entry. *Journal of School Psychology*, 51, 643–658.
- Rothbart, M. K. (2007). Temperament, development, and personality. *Current Directions in Psychological Science*, 16, 207–212. doi: [10.1111/j.1467-8721.2007.00505.x](https://doi.org/10.1111/j.1467-8721.2007.00505.x)
- Rothbart, M. K., Ahadi, S. A., Hershey, K. L., & Fisher, P. (2001). Investigations of temperament at three to seven years: The children's behavior questionnaire. *Child Development*, 72, 1394–1408.
- Rothbart, M. K., & Bates, J. E. (2006). Temperament. In W. Damon, R. Lerner, & N. Eisenberg (Eds.), *Handbook of child psychology, sixth edition: Social, emotional, and personality development* (Vol. 3, pp. 99–106). New York, NY: Wiley.
- Rothbart, M. K., & Bates, J. E. (2008). Temperament. In W. Damon & R. M. Lerner (Eds.), *Child and adolescent development: An advanced course* (pp. 54–65). New York, NY: Wiley.
- Rothbart, M. K., Ellis, L. K., Rueda, M. R., & Posner, M. I. (2003). Developing mechanisms of temperamental effortful control. *Journal of Personality*, 71, 1113–1143.
- Rothbart, M. K., & Jones, L. B. (1998). Temperament, self-regulation, and education. *School Psychology Review*, 27, 479–491.
- Rudasill, K. M., Reio, T. G., Stipanovic, N., & Taylor, J. E. (2010). A longitudinal study of student-teacher relationship quality, difficult temperament, and risky behavior from childhood to early adolescence. *Journal of School Psychology*, 48(5), 389–412.
- Sanson, A., Letcher, P., Smart, D., Prior, M., Toumbourou, J. W., & Oberklaid, F. (2009). Associations between early childhood temperament clusters and later psychosocial adjustment. *Merrill-Palmer Quarterly*, 55, 26–54.
- Schmidt, L. A., Fox, N. A., Perez-Edgar, K., & Hamer, D. H. (2009). Linking gene, brain, and behavior: DRD4, frontal asymmetry, and temperament. *Psychological Science*, 20, 831–837.
- Silver, R. B., Measelle, J. R., Armstrong, J. M., & Essex, M. J. (2005). Trajectories of classroom externalizing behavior: Contributions of child characteristics, family characteristics, and the teacher-child relationship during the school transition. *Journal of School Psychology*, 43, 39–60.
- Simonds, J., Kieras, J. E., Rueda, M. R., & Rothbart, M. K. (2007). Effortful control, executive functioning, and emotional regulation in 7–10-year old children. *Cognitive Development*, 22, 474–488.
- Spinrad, T. L., Eisenberg, N., Cumberland, A., Fabes, R. A., Valiente, C., Shepard, S. A., et al. (2006). Relation of emotion-related regulation to children's social competence: A longitudinal study. *Emotion*, 6, 498–510.

- Spinrad, T. L., Eisenberg, N., Harris, E., Hanish, L., Fabes, R. A., Kupanoff, K., ... Holmes, J. (2004). The relation of children's everyday nonsocial peer play behavior to their emotionality, regulation, and social functioning. *Developmental Psychology, 40*, 67–80.
- Thomas, A., Chess, S., Birch, H. G., Hertzog, M. E., & Korn, S. (1963). *Behavioral individuality in early childhood*. Oxford, England: New York University Press.
- Thurman, S. K., & Kiepert, M. H. (2008). Issues and concerns in conducting applied cognitive research. In S. K. Thurman & C. A. Fiorello (Eds.), *Applied cognitive research in K-3 classrooms* (pp. 265–288). New York, NY: Routledge/Taylor & Francis Group.
- Thurman, S. K., & McGrath, M. C. (2008). Environmentally based assessment practices: Viable alternatives to standardized assessment for assessing emergent literacy skills in young children. *Reading and Writing Quarterly: Overcoming Learning Difficulties, 24*, 7–24.
- Ursache, A., Blair, C., Stifter, C., & Voegtline, K. (2013). Emotional reactivity and regulation in infancy interact to predict executive functioning in early childhood. *Developmental Psychology, 49*, 127–137.
- Valiente, C., Eisenberg, N., Fabes, R. A., Shepard, S. A., Cumberland, A., & Losoya, S. H. (2004). Prediction of children's empathy-related responding from their effortful control and parents' expressivity. *Developmental Psychology, 40*, 911–926.
- von Suchodoletz, A., Trommsdorff, G., Heikamp, T., Wieber, F., & Gollwitzer, P. M. (2009). Transition to school: The role of kindergarten children's behavior regulation. *Learning and Individual Differences, 19*, 561–566.
- Williams, L. R., Degnan, K. A., Perez-Edgar, K. E., Henderson, H. A., Rubin, K. H., Pine, D. S., ... Fox, N. A. (2009). Impact of behavioral inhibition and parenting style on internalizing and externalizing problems from early childhood through adolescence. *Journal of Abnormal Child Psychology, 37*(8), 1063–1075. doi: [10.1007/s10802-009-9331-3](https://doi.org/10.1007/s10802-009-9331-3)
- Wilson, B. (2006). The entry behavior of aggressive/rejected children: The contributions of status and temperament. *Social Development, 15*(3), 463–479.
- Yaman, A., Mesman, J., van IJzendoorn, M. H., & Bakermans-Kranenburg, M. J. (2010). Parenting and toddler aggression in second-generation immigrant families: The moderating role of child temperament. *Journal of Family Psychology, 24*(2), 208–211.
- Zhou, Q., Chen, S. H., & Main, A. (2012). Commonalities and differences in the research on children's effortful control and executive function: A call for an integrated model of self-regulation. *Child Development Perspectives, 6*, 112–121.