

# Children's Temperament and the Transition to Kindergarten: A Question of "Fit"



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**Abstract** Temperament, or biologically based differences in individuals' reaction-ary and regulatory mechanisms to their environment (Rothbart MK, Bates JE. *Handbook of child psychology: social, emotional, and personality development*. Wiley, New York, 2006), comprises multiple dimensions which have been implicated in enhancing or inhibiting children's school readiness. This chapter seeks to provide readers with a primer of five temperamental dimensions and their status as protective or risk factors for preschool students' transition to kindergarten: shyness, activity, exuberance, adaptability, and effortful control (temperamental self-regulation). We begin by defining each temperamental dimension and summarizing how extant research has shown how each temperament dimension facilitates or impedes children's successful transitions into kindergarten. Next, we present classroom-level strategies that facilitate good "fit" between different temperament dimensions and classrooms and the role of temperament in building student-teacher relationships. Finally, we review two empirically supported interventions as exemplars for facilitating good "fit" between temperament and classrooms (i.e., the *INSIGHTS* and *Banking Time* interventions). These exemplar interventions emphasize psychoeducation of temperamental dimensions and seek to promote classrooms which are sensitive to students' unique temperamental needs.

As she settles into the read-aloud chair, Mrs. Penner, an experienced kindergarten teacher, invites a shy student to sit a little closer to her. She tells an exuberant child, "I thought of you when I picked this book – it's high energy!" With a smile, she beckons a solitary student to join the group. As the children quiet down, she signals their attention with a special hand clap. Twenty pairs of hands clap back in unison, as the children sit with legs crossed, looking up at her expectantly. Although there are moments when Mrs. Penner demands such uniformity in her students, what she enjoys *most* about teaching is working with their varied personalities. Indeed, Mrs.

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Penner's thoughtful responsiveness to the individual differences of her students indicates an understanding of each child's *temperament*, an important concept in child development and a useful tool for teachers of young children.

Temperament describes the biologically based individual differences in reactivity and regulation that affect a child's emotional or behavioral response patterns in different environments (Rothbart & Bates, 2006). An example of these differences may be one child's ability to concentrate on reading in a noisy room, while another may become frustrated from the same task. In working with children, viewing them through the lens of temperament allows us to simultaneously consider the emotional, biological, and cultural mechanisms underlying such differential behaviors. Temperament data can thus be a powerful tool for use not only in assessment and intervention but in building relationships with children.

The first modern researchers to use the term "temperament" in publication were Alexander Thomas, Stella Chess, and colleagues (Thomas, Chess, Birch, Hertzog, & Korn, 1963), psychologists who noted consistent "primary reaction patterns" in their pediatric clients. By analyzing extensive interviews with the parents of 3–6-month-olds, Thomas, Chess, and Birch (1968) identified nine dimensions of temperament in infants, further refined into three broad temperamental categories: *easy*, *difficult*, and *slow-to-warm-up*. *Difficult* children were fussy and reacted quickly and loudly to novel stimuli, while *easy* children were calmer and reacted more positively when confronted with a change in their environment. *Slow-to-warm-up* children initially showed the traits of a difficult child when confronted with a stimulus, but later relaxed into a profile more like that of an "easy" child as they became acclimated to a situation.

Additionally, Thomas and Chess (1977) were first to propose the theoretical framework of *goodness-of-fit*, which refers to the extent to which parents or caregivers are able to accept and accommodate a child's temperamental characteristics. An exuberant parent, for example, may respond to a shy child with frustration or anger, and a more inhibited parent may also find it challenging to manage a high-approach or high-activity child. The child's psychological development is optimized when caregiving practices align with the child's temperament, demonstrating *goodness-of-fit* (Thomas & Chess, 1977).

Temperament research has flourished since the late 1970s; in the past three decades, researchers have produced myriad theoretical fine-tunings of the concept (Buss & Plomin, 1984; Goldsmith & Campos, 1982; Kagan, Snidman, Arcus, & Reznick, 1994). In the early 1980s, Mary Rothbart and colleagues began conducting extensive statistical and theoretical analyses of available data on temperament with the goal of developing stage-appropriate measures that could extend beyond infancy to any age group. Of equal importance, Rothbart's work has also focused on refining a cohesive theoretical understanding of temperament across the lifespan (Rothbart, 2011).

For Rothbart and colleagues (Rothbart & Bates, 2006; Rothbart & Derryberry, 1981), a person's temperament is composed of physiologically based reactionary

and regulatory mechanisms that influence both overt behaviors, like motor activity and attention, and emotional reactions, like negative affect (Rothbart & Derryberry, 1981). This "psychobiological" approach to temperament is based on two processes, *reactivity* and *regulation*. The first process, *reactivity*, describes neurobiological mechanisms that drive a child's involuntary, automatic reactions to stimuli in the environment. Through *regulation*, the second process in the model, a child works to control this reactivity through self-regulatory strategies such as effortfully shifting attention or inhibiting a response.

To measure temperament in children, Rothbart and colleagues developed the Children's Behavior Questionnaire (CBQ) (Rothbart, Ahadi, Hershey, & Fisher, 2001). The CBQ measures 15 temperament dimensions, which are further refined into 3 major groups of traits: negative affect (anger/frustration, discomfort, fear, sadness, and soothability), surgency (activity level, impulsivity, high-intensity pleasure, and shyness), and effortful control (attentional focusing, inhibitory control, low-intensity pleasure, and perceptual sensitivity).

Although a person's temperament is founded on reactive and regulatory capacities present at birth, temperament is only one piece of a child's developing personality (Rothbart & Bates, 2006). How these traits are expressed will be moderated by the child's maturation and experiences (Rothbart, 2011; Stuss, 1992). Temperament is thus a "general tendency" and can be "redirected" (Rothbart & Bates, 2006). When predicting child outcomes, temperament must therefore be considered in concert with a child's social environments (Tarullo, Milner, & Gunnar, 2011). Thus, viewing temperament in concert with a child's environment may often be a better gauge of developmental trajectory than considering temperament in isolation (Berdan, Keane, & Calkins, 2008). For example, children with greater negative affect or poor effortful control are at risk for school adjustment problems (for review, see Al Hendawi, 2013), yet having a positive peer environment has been shown to buffer against these temperamental risk factors and support classroom success (Keogh, 2003). Because children's behavior in preschool and at the transition to kindergarten is less stable and more malleable than at later ages, viewing behavior problems through the lens of temperament can inform early interventions (Keogh, 2003; Smith, Calkins, Keane, Anastopoulos, & Shelton, 2004) and give insight into school readiness (Pianta & Walsh, 1996).

This chapter explores five temperamental dimensions: shyness, activity, exuberance, adaptability, and effortful control (temperamental self-regulation). Each of these dimensions has been found to be either a risk or protective factor for children in preschool settings and at the transition to kindergarten. In this chapter we will identify how each temperament dimension facilitates or impedes children's successful transitions into kindergarten. Finally, we will present classroom-level strategies that facilitate good "fit" between different temperament dimensions and classrooms, including a review of empirically supported interventions specifically designed for this purpose.

## Temperament as a Risk and Protective Factor During the Kindergarten Transition

### *Shyness*

Shyness is typically defined as an individual's feelings of uneasiness or hesitation when faced with an unfamiliar situation (Coplan & Armer, 2007). It can include feelings of unease or discomfort while in unfamiliar situations and a fear of social evaluation from peers (Asendorpf, 1991; Zimbardo, 1977). Shyness has consistently been found to be a risk factor for children's success, as it can hinder both academic performance and social interactions. Shy children may often feel uncomfortable in educational settings because of the particular demands of a classroom, including collaborating with peers, asking for help when needed, taking risks in problem-solving, and stepping out of their comfort zone to explore new things (Levin & Hart, 2003; Spere, Evans, Mansell, & Hendry, 2007). For shy children, these everyday tasks may be quite difficult. Research has shown that shy children often perform worse on standardized tests (Ialongo, Edelsoh, Werthamer-Larsson, Crockett, & Kellam, 1995; Nowakowski et al., 2009) and also tend to show more anxiety and helplessness than their non-shy classmates during testing (Hirvonen, Aunola, Alatupa, Viljaranta, & Nurmi, 2013).

Shy children are less academically engaged, less likely to take academic risks, less likely to receive interventions, and in the face of task difficulty less likely to persist and more prone to withdrawal than their non-shy peers (Hughes & Coplan, 2010). Shy children may try to "blend in" to the background of the classroom in order to avoid being put on the spot and potentially being embarrassed in front of others. Additionally, Koplow (1983) posited that socially anxious and seemingly unresponsive children might lapse into daydreaming as an "escape" from their anxieties. As such, if a teacher perceives that a child has poor engagement in the classroom and appears uninterested in the material, the teacher may attribute this to unpreparedness and/or lower intellectual ability. Perhaps a greater risk, however, is how often shy children's difficulties are overlooked by their teachers. Compared to children who are disruptive, children who are shy and inattentive may be at a greater risk for academic performance problems because the shy children's withdrawal may prevent teachers from noticing academic deficits as early as they would with less shy students (Finn, Pannozzo, & Voelkl, 1995). Indeed, a number of studies have found that shy children's academic problems tend to go unnoticed by teachers (Brophy & Evertson, 1981; Keogh, 2003; Rudasill & Rimm-Kaufman, 2009; Swenson, 2015).

Aside from reduced classroom engagement, shy elementary children also report lower levels of self-esteem compared to their non-shy peers (e.g., Coplan, Findlay, & Nelson, 2004; Crozier, 1995; Zimbardo, 1977). Coplan and Rudasill (2016) identified low self-esteem as the most concerning long-term risk of shyness in childhood because self-esteem involves mental health, understanding of the self, and self-competence and informs goal setting. Thus, shy children risk entering cycles

wherein their low self-esteem precludes them from engaging in class, leading to further deficits in classroom performance.

Shy children typically present with strong hesitancy to speak up in conversation or to volunteer answers to the class when prompted. This often occurs because of a fear of becoming embarrassed or nervous in front of others (Asendorpf & Meier, 1993; Crozier & Badawood, 2009; Evans, 1987). This reluctance to speak supports research that has found that shy children have less developed language skills than their non-shy peers (e.g., Evans, 1987, 1993, 1996; Prior et al., 2008; Rudasill, Rimm-Kaufman, Justice, & Pence, 2006). These underdeveloped language skills may occur because shy children do not speak as often as their non-shy peers and therefore do not have the opportunities to develop and practice their language skills. However, it may be that these weak language skills are the result of a deficit in performance, rather than a deficit in competence (Coplan & Armer, 2005; Coplan & Evans, 2009; Crozier & Hostettler, 2003). In other words, shy children may not have a deficit in language skills, but rather have a difficulty in expressing themselves in social situations. This produces a cyclical pattern in the interactions between shy children and their teachers, where teachers ask shy children more questions than their non-shy peers and the shy children either don't respond or give short responses, which only prompts further questions from the teachers (Evans, 1987). It may be that probing shy children for answers leads them to develop even more anxiety or fear, which leads to further silence and fear of speaking. These cyclical interactions may do more harm than good in easing the child into conversation and making them feel comfortable.

Coplan and Prakash (2003) found that shy children receive more initiations for interactions from their teachers but do not initiate interactions with teachers on their own. This reinforces the notion that shy children are not comfortable speaking up or asking for help when needed. Teachers report that the interactions that they do have with shy children are short, strained, and often uncomfortable (Swenson, 2015). Additionally, the relationships that shy children form with their teachers are often described as dependent and "clingy," but not close (Birch & Ladd, 1997; Rudasill et al., 2006; Swenson, 2015). Therefore, shy children begin at a disadvantage in the classroom, both socially and academically, because they interact less with their peers, they may have cognitive or academic deficits overlooked, and teachers may have more difficulty engaging them. However, as will be highlighted later in the chapter, targeted interventions and specific teaching practices may help to mediate some of negative effects associated with children's shyness.

## *Activity*

Temperamental activity refers to the quality and degree of a child's motoric movement. Children's activity level has been described in terms of the "tempo" and "vigor" of their physical movement (Buss & Plomin, 1984) and has also been linked to their tendency to seek out experiences that are exciting and stimulating (Rothbart

& Ahadi, 1994). According to the temperament model of Rothbart and Derryberry (1981), higher activity levels are the result of high physiological reactivity. Together with positive emotionality, high approach, and low shyness, activity level is situated in the broader “reactive” temperament dimension of surgency, also referred to as “exuberance.” Research that isolates activity level from the other surgent traits has linked it to children’s externalizing difficulties (i.e., fighting, aggression) but usually only when moderated by other factors such as low approach (Teglasi & Meshbesh, 2004), low attention span (Caspi, Henry, McGee, Moffitt, & Silva, 1995), and negative emotionality (Rothbart & Ahadi, 1994; Rothbart & Bates, 1998).

A naturally high activity level might engender other problems for a child in a classroom. For instance, active children might be more prone to distraction or frustration by having to sit still for longer periods of time. In a study of first graders (Martin, Nagle, & Paget, 1983), activity and distractibility were linked to a reduction in a child’s “constructive self-directed activity” and an increase in “gross-motor inappropriate behavior.” Distractibility and persistence were also linked to “non-constructive self-directed activity,” such as a child playing with her hair, and “non-constructive peer interaction” (Martin et al., 1983). Higher activity level and distractibility, when combined with lower persistence, are traits generally related to lower academic achievement for this age and grade (Martin, 1989).

However, a moderate, or even high, activity level can offer distinct benefits for preschool- and early elementary-age children. Results of studies looking at motor activity level in earlier grades, such as preschool, are mixed, and moderate motor activity at this age has been found to have cognitive benefits. Indeed, movement has a functional and meaningful role in young children’s development: motoric activity provides feedback to the developing central nervous system and encourages prefrontal lobe functioning and inhibitory control (Campbell, Eaton, & McKeen, 2002). High activity level may also be associated with curiosity and motivation during the preschool years (Rudasill, Gallagher, & White, 2010). In fact, preschoolers with higher activity may display better academic achievement than their less active peers (Rudasill, Gallagher, & White, 2010), and children who displayed more physical movement may do better on certain tasks depending on the nature of the activity (Graziano, Jensen-Campbell, & Sullivan-Logan, 1998).

Nevertheless, teachers may view high activity as detrimental to student learning, given a common classroom expectation is for students to remain seated and quietly pay attention. Past research has placed low to moderate activity within the “temperamental profile” of a student that teachers view as the “most teachable.” In studies by Keogh (1986, 1989), teachers reported that the “most teachable” students generally possessed high attention and persistence, lower negative emotionality, and low to moderate activity. This group of students has also been found to receive more positive attention from teachers than their “less teachable” counterparts (Pullis, 1989). Indeed, when given a hypothetical teaching situation or anecdote, teachers are more likely to nominate active and distractible children to be “removed” from class than less active children (Martin et al., 1983).

Activity level is most frequently associated with maladjustment when it is "undercontrolled" or unregulated. For example, hyperactivity, impulsivity, and inattention are the three traits associated with clinically diagnosed ADHD (Sánchez-Pérez & González-Salinas, 2013). Therefore, in order to achieve a full picture of a child's behavior, the importance of assessing activity level in concert with other traits cannot be overstated. Martel and Nigg (2006) propose, for example, that ADHD is not necessarily a diagnosis for children who are simply very active, but rather children who concurrently struggle with both emotional and physical impulsivity. In addition, Chhabildas, Pennington, and Willcutt (2001) view lack of attention, rather than hyperactivity, as the driver of ADHD symptomatology.

In terms of school readiness, activity-level assessments may also yield differential results, depending on a child's gender. Although children's activity levels do decrease with age (Eaton & Yu, 1989), it has been well-documented that boys are more physically active than girls during the school-age years, preferring more vigorous activities from preschool through adolescence than girls (even though this may be due to socialization effects) (Birns & Sternglanz, 1983; Eaton & Enns, 1986; McClowry, Halverson, & Sanson, 2003). And as higher activity is often correlated with greater distractibility, boys may be seen by their teachers as less focused and attentive as compared with girls (Serbin, Zerkowitz, Doyle, Gold, & Wheaton, 1990).

In short, high activity level provides both advantages and disadvantages for children, depending on other factors such as the intensity and timing of a child's activity, the teacher's attitudes toward the activity, and the child's ability to *self-regulate* activity as appropriate. These factors present a meaningful point of contact for intervention or adaptation to encourage student success. Thus, parents and teachers would be wise to consider how they can foster positive alignment of children's activity levels with expectations and seek to improve regulation of that activity when necessary.

## ***Exuberance***

Some children are more extraverted than others; in terms of temperament, they exhibit a higher activity level, a greater positive affect, and a stronger tendency to approach novel or high-intensity experiences as compared to their peers (Berdan et al., 2008; Derryberry & Rothbart, 1997). Such extraverted, or "surgent," children are generally less shy and show greater sociability (Fox, Henderson, Rubin, Calkins, & Schmidt, 2001; Rothbart et al., 2001). In temperament literature, the term "surgency" refers to a cluster of traits combining extraversion, high positive affectivity, high approach, and low shyness. Such children are often referred to as having "positive emotionality" or, more frequently, "exuberance" (Fox et al., 2001; Putnam & Stifter, 2005).

According to Derryberry and Rothbart (1997), exuberant children are highly sensitive to rewards and are thus often highly engaged with their environment as they

seek out those rewards. In fact, all previous terms for exuberance (surgency, positive emotionality, extraversion) are used to describe children who actively seek out rewarding stimuli in their environments. Exuberance therefore may confer children multiple benefits in social situations. Positive affect, for example, boosts mood and protects against worry (Lonigan, Phillips, & Hooe, 2003), a focus on goal/reward attainment fosters persistence (Carver, 2004; Dennis, 2006), and positive emotionality encourages social skill-building (Garner & Waajid, 2012; Rydell, Berlin, & Bohlin, 2003, 2007). Indeed, temperamental exuberance, which shows stability across situations (Fox, Henderson, Marshall, Nichols, & Ghera, 2005) and throughout the school-age years (Caspi et al., 2003), is generally linked to increasing social competence as children develop (Fox et al., 2001; Hane, Fox, Henderson, & Marshall, 2008; Rydell et al., 2007).

However, while a moderate level of exuberance promotes positive adaptation, highly exuberant children may be at risk for maladjustment (Berdan et al., 2008; Eisenberg et al., 2001) if their strong approach tendencies enable too much impulsivity without regulation (Eisenberg et al., 2005; Eisenberg & Morris, 2002). In contrast to more inhibited peers, exuberant children may be especially prone to frustration or anger when a reward is blocked (Carver & Harmon-Jones, 2009). Due to their increased focus on social exploration and decreased inhibition, highly exuberant children may also be less focused on following “the rules” or paying close attention to their own behavior (Berdan et al., 2008; Dennis, 2006; Putnam & Stifter, 2005; Rydell et al., 2003). Thus, exuberant children, despite their many positive qualities, may need additional assistance regulating their strong approach tendencies (Polak-Toste & Gunnar, 2006; Stifter, Putnam, & Jahromi, 2008).

Not surprisingly, very high exuberance and low regulation have been linked to externalizing problems in children, both concurrently and longitudinally (Kim, Walden, Harris, Karrass, & Catron, 2007). Eisenberg et al. (2001) found that children aged 4–8 years with high anger/frustration levels and low-effortful control were at risk for social maladjustment. Furthermore, highly exuberant children may be disliked by other children if their interaction style becomes too overbearing (Berdan et al., 2008; Coie, Dodge, & Kupersmidt, 1990; Rubin, Coplan, Fox, & Calkins, 1995). When their goals are not met, preschool children with such “high approach” may resort to relationally or physically aggressive strategies such as yelling or hitting (Gunnar, Sebanc, Tout, Donzella, & van Dulmen, 2003; Rubin et al., 1995). Tarullo and colleagues (2011) found that highly exuberant children in preschool classrooms tend to display more dominance, anger, and conflict in their friendships. Without intervention, social isolation, although rare, may become a problem for highly exuberant children at school (Coie et al., 1990).

Thus, a positive classroom or peer environment is especially important in protecting exuberant children from maladjustment, as they are likely to be motivated by social rewards. In preschool, according to one study, the peer group may offer “remedial support” for these children in terms of socialization and redirection (Berdan et al., 2008). Indeed, the positive emotionality and reward-seeking nature of exuberant children also mean that they are likely to self-regulate their impulses based on social feedback from both adults and peers because positive feedback is a



reward for them. Indeed, their risk for developing externalizing problems may diminish to the extent that these children can develop strong social motivations for self-regulating (Rubin et al., 1995).

Emotionally, exuberant children have a tendency toward anger, rather than sadness, but this tendency may have additional self-regulatory benefits. He, Xu, and Degnan (2012) note that anger, more so than sadness, is frequently accompanied by problem-solving behaviors. Further research has shown that anger can be adaptive for young children as it is associated with them taking more action during a problem-solving task (Dennis, Cole, Wiggins, & Cohen, 2009). In pursuit of a highly desired goal, anger may increase children's motivation to try different goal-attainment strategies, thereby fostering the development of persistence (Carver & Harmon-Jones, 2009; He et al., 2012). The approach-oriented nature of exuberance might also help children with emotional control. Dennis, Hong, and Solomon (2010) reported that exuberant preschool children who attempted a disappointing task showed stable, high levels of emotional regulation regardless of their level of effortful control.

Therefore, although exuberance is often a beneficial trait for a child to possess, it also has the potential to manifest in externalizing behavior problems or social deficits. Parents and teachers must seek to monitor exuberant children and help those children learn to regulate where appropriate, ensuring these children have access to rewards before they try to seek them out themselves. In doing so, exuberant students may engage in disruptive behaviors which can negatively impact the learning of the rest of their classrooms.

### *Adaptability*

A comparatively underexplored temperamental dimension in the school readiness literature is that of adaptability. *Adaptability* represents the extent to which a child perceives an environmental change to be stressful and responds appropriately to that change (Thomas & Chess, 1977). However, while the temperament traits outlined thus far represent the child's initial reactions to environmental stimuli (e.g., the predisposition to withdraw when called on in class), adaptability is reflective of their longer-term response to changes (e.g., the tendency that a child will experience difficulties fitting in with a new classroom). Given the considerable changes associated with transitioning into kindergarten, it therefore stands to reason that low adaptability should be considered as a risk factor when preparing for that transition. Indeed, teachers rate students with low adaptability as having the poorest adjustment to kindergarten (Slee, 1986). Other indicators of academic success have also been linked to adaptability, including social adjustment and performance on problem-solving tasks (Carey, Fox, & McDevitt, 1977) and reading and math skills (Martin & Holbrook, 1985). Adaptability has also been included as a trait of "teachable" students (Keogh, 1994), a perception which, as previously mentioned, influences teacher interactions with children (Sanson, Hemphill, & Smart, 2004). Teacher ratings of academic skills can be largely explained by the teacher's

perception of children's persistence and adaptability (Guerin & Gottfried, 1994). Low adaptability ratings predict increased anxiety, peer rejection, disruptive behaviors, and poor academic performance (Grant, Bagnell, Chambers, & Stewart, 2009; Martin et al., 1983; Maziade et al., 1990; Walker, 2001). It appears that success in the classroom is, in large part, dependent upon the individual's ability to adapt to changes within the classroom.

Adaptability is a particularly stable dimension of temperament; a meta-analytic review of longitudinal studies of temperament showed adaptability to be the most consistent across the lifespan (Roberts & DelVecchio, 2000). However, the deleterious effects of less adaptable temperaments appear to be ameliorated by the emotional climate of classrooms. That is, low adaptability is only associated with poor academic and social outcomes in classrooms where teachers do not consistently provide emotional support to their students (Brock & Curby, 2016). This provides further evidence of the importance of goodness-of-fit between temperament and the environment: although a stable trait, low adaptability is by no means a life sentence to poor outcomes. However, when there is not good fit, particular temperamental traits can be quite damaging. Similar to shy children, children with lower adaptability are much less likely to initiate interactions in their classroom (Martin et al., 1983), and less adaptable children are more likely to spend classroom time observing others rather than engaging in educational activities (Gersten, 1989).

### *Effortful Control*

Whereas initial models of temperament focused on children's individual differences in their reactions to the environment (Thomas & Chess, 1977), later psychometric analyses of children's behavior revealed an additional, regulatory, dimension of temperament: effortful control (Rothbart & Bates, 2006). This factor comprises temperamental traits that facilitate the regulation of individuals' reactive tendencies captured in earlier models of temperament. Note that the name of the construct, "*effortful control*," explicitly suggests that the child's regulation is *purposeful* rather than *involuntary* (Eisenberg et al., 2013). To illustrate this point, consider the shy children discussed earlier in this chapter. Whereas shy children may wish to engage with peers and teachers in their classrooms, they experience internal barriers from reactions to their environment (e.g., discomfort, anxiety) that lead to involuntary hesitation overriding their desire to participate. That is, their temperamental tendency is to be inhibited, regardless of their motivation to behave otherwise (Kagan, 2012). In contrast, regulated children (i.e., those exhibiting effortful control) are able to adjust their responses to their environment appropriately (Eisenberg et al., 2013). This regulation may manifest in the purposeful activation of a non-preferred response (e.g., a shy child raising their hand despite feeling anxious) or in the purposeful inhibition of a preferred response (e.g., an exuberant child resisting

shouting out the answer before being called upon). As such, the development of effortful control has powerful implications for a child's readiness during the transition into school, where expectations for monitoring and regulating behavior are greater than ever before in the child's life (e.g., increased demands that students remain in their seats for teacher instructions).

There is a robust literature examining how effortful control relates to school readiness. Students who enter kindergarten with high levels of effortful control finish the school year ahead of low-effortful control students in academics, such as math, vocabulary, and emergent literacy (e.g., Ponitz, McClelland, Matthews, & Morrison, 2009). Children's self-regulation demonstrates significant growth during the preschool and kindergarten years, and that growth appears to be facilitated in part by the demands placed upon students as they are expected to monitor and manage their own behavior and attention throughout the school day (Bronson, 2001). Researchers exploring developmental trajectories of self-regulation have found that students' rates of growth in effortful control are also powerful predictors of later social relationships, above and beyond initial levels of effortful control (Vazsonyi & Huang, 2010).

Children's effortful control has also been correlated with academic skills, such as literacy and math in preschool (McClelland, Cameron, Wanless, & Murray, 2007), and preschool self-regulation predicts reading achievement in kindergarten (Howse, Calkins, Anastopoulos, Keane, & Shelton, 2003). More developed effortful control predicts preschoolers' academic readiness and adjustment, and growth in effortful control during the preschool year may help low-income students overcome their risk of unsuccessful transitions (Lengua et al., 2015). Indeed, well-developed effortful control has been identified as an indicator of school readiness (Blair, 2002), as successful students must regulate their behaviors and follow directions (Lin, Lawrence, & Gorrell, 2003) and eventually complete homework on their own (Ramdass & Zimmerman, 2011). Difficulties adjusting to the expectations to regulate their own behaviors, especially following directions, are a common weakness among incoming kindergartners, according to their teachers (Rimm-Kaufman, Pianta, & Cox, 2000).

Consistent with other temperamental traits, the effects of effortful control on adjustment do not operate within a vacuum. For example, kindergartners' adjustment appears to be affected by interactions between student's and teacher's effortful control, such that greatest adjustment is found for students whose effortful control level (i.e., high or low) matches or "fits" that of their teachers (Gaias, Abry, Swanson, & Fabes, 2015). Poorly regulated students, for example, experience the most conflictual relationships with their teachers when their teachers are highly regulated (Gaias et al., 2015). In the sections that follow, we explore teacher-child relationships and interventions targeting classroom quality and how these facilitate goodness-of-fit to promote successful kindergarten transitions.

## Promoting Goodness-of-Fit During the Transition to Kindergarten

Teacher-child relationships have been consistently shown to be important for children's outcomes (e.g., Davis, 2003; Hamre & Pianta, 2001; Hughes & Kwok, 2007). When teacher-child relationships are positive (i.e., based on trust and mutual respect), they serve as sources of support for children and promote positive academic, behavioral, and socioemotional outcomes (Hughes & Kwok, 2007; Hughes, Luo, Kwok, & Loyd, 2008; Pianta, 1999; Rudasill, Reio, Stipanovic, & Taylor, 2010), particularly for children at risk for academic difficulties (Hamre & Pianta, 2001). On the other hand, negative teacher-child relationships, marked by high levels of conflict, are associated with poor outcomes for children. So, we must ask: What predicts the quality of the teacher-child relationship?

Research suggests that certain temperament traits predispose children to different types of relationships with their teachers (Rudasill et al., 2006; Rudasill & Rimm-Kaufman, 2009; Rydell, Bohlin, & Thorell, 2005). Certain temperament traits indicative of low regulation and high reactivity present more difficulties for parents and teachers. Children with this combination of temperament traits are likely to have problems forming positive relationships with teachers and more conflict with teachers in elementary grades (Rudasill, Niehaus, Buhs, & White, 2013). Shyness, anger, and effortful control have also been linked to teacher-child relationship. Anger is positively related to conflict (Justice, Cottone, Mashburn, & Rimm-Kaufman, 2008), effortful control is negatively related to conflict and positively related to closeness (Rudasill & Rimm-Kaufman, 2009), and shyness is negatively related to both conflict and closeness (Rudasill & Rimm-Kaufman, 2009; Rydell et al., 2005). Some research suggests that children's temperament impacts the frequency of interactions teachers have with their students that, in turn, affects the quality of the teacher-child relationship (Rudasill & Rimm-Kaufman, 2009). Specifically, children's shyness and effortful control predict the frequency of teacher- and child-initiated interactions in first-grade classrooms. More shyness predicts fewer child-initiated interactions, and less effortful control predicts more teacher- and child-initiated interactions which, in turn, predicts less closeness and more conflict, respectively (Rudasill, 2011; Rudasill & Rimm-Kaufman, 2009).

Research suggests that children with more aversive temperament traits may be buffered by positive teacher-child relationships. Griggs, Gagnon, Huelsman, Kidder-Ashley, and Ballard (2009) found that temperamentally difficult preschool children with high-quality relationships with their teachers had better peer interactions during play compared to similar children with poor student-teacher relationships. With a sample of first graders, Arbeau, Coplan, and Weeks (2010) showed that positive teacher-child relationship quality buffered shy children from displaying anxious or asocial behavior. In a longitudinal study, Pluess and Belsky (2009) found that, for children who had been identified as temperamentally difficult in infancy, low-quality care in preschool predicted more problematic behavior in kindergarten, whereas high-quality preschool care predicted less problematic behavior in kindergarten, compared to children identified as temperamentally easy in infancy.

Therefore, for certain temperaments, successful transitions into kindergarten may be contingent upon classroom-level changes to promote positive teacher-child relationships and higher quality of care. There are numerous interventions that have been implemented in classrooms to enhance both the relationships and interactions that children have with their teachers, as well as classroom quality in general. Each of these interventions targets unique aspects of the classroom environment and the risk factors that come with certain types of temperaments, ultimately aiming to improve the "fit" between temperament and classrooms.

One well-known intervention is *INSIGHTS* (O'Connor, Cappella, McCormick, & McClowry, 2014a). This temperament-based intervention is used in early elementary grades and teaches parents, children, and teachers about temperament in order to foster the social, emotional, and behavioral development of children. Teachers, parents, and children learn about different types of temperament through the use of puppets and vignettes. For example, one puppet "Coretta the Cautious" is shy. Teachers and parents are taught about what it means to be shy and how to support shy children effectively through watching Coretta in a variety of different situations. The other puppets include Fredrico the Friendly, Gregory the Grumpy, and Hilary the Hard Worker.

O'Connor et al. (2014a) found that the *INSIGHTS* intervention enhanced the critical thinking and math skills of shy children over the transition between kindergarten and first grade. Children enrolled in *INSIGHTS* also experienced significantly faster growth in math and reading achievement, as well as increased sustained attention, than children who were enrolled in a supplemental reading program (O'Connor, Cappella, McCormick, & McClowry, 2014b). *INSIGHTS* has also demonstrated effectiveness in reducing disruptive and off-task behaviors among children with "high maintenance" (i.e., difficult) temperaments (McCormick, O'Connor, Cappella, & McClowry, 2015). First-grade classrooms that used *INSIGHTS* had higher teacher practices of classroom organization and lower class-wide off-task behaviors over the course of the school year (Cappella et al., 2015). From this we can gather that by teaching teachers to be aware of different temperaments as well as effective strategies for working with children's individual temperaments, we can increase children's achievement and make the classroom a more comfortable and inviting place for both teachers and students.

*Banking Time* is another classroom intervention which makes use of one-on-one time between the teacher and a specific child in the classroom. During these meetings, the child chooses an activity for both parties to engage in. The teacher is responsible during these meetings for observing the child's action, narrating what the child is doing aloud, labeling the child's feelings, and conveying supporting messages to the child in order to enhance the teacher-child relationship (Driscoll & Pianta, 2010). After the intervention, research has shown that teachers reported more perceptions of closeness with children who participated in *Banking Time* than with children who did not. Additionally, teachers reported increases in children's frustration tolerance, task orientation, and competence. Teacher reports also indicated decreases in children's conduct problems for those in the *Banking Time* condition when compared with peers in the control condition. A mutual understanding between the teacher and child is extremely important for the overall quality of

the teacher-child relationship. *Banking Time* seems to have a significant positive impact on the teacher-child relationship and academic functioning (Driscoll & Pianta, 2010) and externalizing behavior problems (Williford et al., 2017).

Williford et al.'s (2017) randomized controlled trial compared *Banking Time*'s impact on preschoolers' externalizing behavior problems against two conditions: business-as-usual or an unstructured "child time" condition where teachers were instructed to spend individual time with the target child but received no additional directions. Both *Banking Time* and child time conditions improved child behavior and positive interactions with teachers compared to business-as-usual, suggesting that increasing individual time between student and teacher can positively affect child behavior. However, only the *Banking Time* condition reduced the number of negative interactions between teachers and children. The authors suggested that *Banking Time*'s emphasis on unconditional acceptance of the child allows both parties to gain experience in nondirective and positive interactions and helps foster a more positive classroom environment. This intervention therefore provides temperamentally sensitive opportunities for individual children to improve their interactions with their classroom environments.

## Summary

In conclusion, decades of temperament research have promoted our understanding of individual differences in children's reactivity to internal and external stimuli and the regulation of those reactions. Recent efforts to explore the implications of temperament have revealed that these characteristics may facilitate or impede the transition into kindergarten. However, the strengths and weaknesses of a given dimension of temperament are contingent upon the environmental context surrounding the student. This chapter's purpose is to challenge educators to consider how their practice affords "fit" for children varying across five temperamental dimensions (shyness, activity, exuberance, adaptability, and effortful control) and how those variations impact children's likelihood of a successful transition to kindergarten. Finally, an exploration of evidence-based interventions that emphasize good fit provides a first step toward ensuring successful transitions for *all* students, regardless of their pre-disposed traits.

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