

Running head: CHILD TEMPERAMENT AND SCHOOL READINESS

CHILD TEMPERAMENT AND SCHOOL READINESS: SURGENCY/EXTRAVERSION,
NEGATIVE AFFECT, EFFORTFUL CONTROL, AND PRE-ACADEMICS IN
PRESCHOOL AND KINDERGARTEN STUDENTS

A Thesis
by
HANNAH SUZANNE VAN DOREN

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Abstract

CHILD TEMPERAMENT AND SCHOOL READINESS: SURGENCY/EXTRAVERSION, NEGATIVE AFFECT, EFFORTFUL CONTROL, AND PRE-ACADEMICS IN PRESCHOOL AND KINDERGARTEN STUDENTS

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The purpose of the current study was to examine the associations among certain temperament traits and early indications of academic performance in preschool and kindergarten children. Three temperament domains—Negative Affect, Surgency/Extraversion, and Effortful Control—were examined in relation to two areas of children’s school readiness skills—language and concepts. The parents of 72 preschool and kindergarten students in a rural Appalachian Mountain community rated their children’s temperaments using the Child Behavior Questionnaire, Very Short Form (CBQ-VSF; Putnam & Rothbart, 2006). The participants were also assessed with the Language and Concepts subtests on the Developmental Indicators of the Assessment of Learning (DIAL-4; Mardell & Goldenberg, 2011). Canonical correlation analysis was used to examine the relationships between the variables. Despite prior research suggesting that child temperament may be linked to academic performance in older children, no significant relationships were found in the current study. Additional research may be needed to consider the complexity of these relationships within preschoolers and kindergarteners separately.

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Dedication

For welcoming me into your family without hesitation, I dedicate this thesis to the Macomsons. To James and Dinah, for providing me with transportation, giving me a place to call home, offering consistent words of affirmation and, most importantly, for raising my best friend. To Tory and Regan, for your open acceptance of my role within your family. And to my favorite Macomson, Carter, for taking sole responsibility of the cooking and cleaning over the past few years, but more importantly, for supporting me unconditionally and for loving me even at my worst. I feel certain that this accomplishment would not have happened without you all.

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Foreward

This thesis is written in accordance with the style of the *Publication Manual of the American Psychological Association (6th Edition)* as required by the Department of Psychology at Appalachian State University.

Child Temperament and School Readiness:
Surgency/Extraversion, Negative Affect, Effortful Control and
Pre-academics in Preschool and Kindergarten Students

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Since 1990, the enrollment of students in preprimary education programs in the United States has gradually increased (U.S. Department of Education, 2015). Due in part to an expansion of the expectations within primary and secondary education, a 6 percent increase of 3- to 5-year-olds enrolled in preprimary programs has also led to the implementation of developmental and pre-academic standards for young children. These expectations advocate for “school readiness” and are designed to increase the number of students who enter primary school with pre-academic knowledge needed to be successful in a formal school environment (National Education Goals Panel, 1998). However, because child development is dynamic in early years, the expectations outlined within national standards also address social and emotional aspects to ensure that children are learning not only essential academic content, but also the interpersonal skills needed to be successful in a cooperative learning environment.

Preschool child development is multifaceted and best conceptualized as resulting from the interplay between within-child characteristics and aspects of the external environment (Gagnon, Kidder-Ashley, & Nickerson, 2007; Neisworth & Bagnato, 2005). Child temperament is one such within-child characteristic that, if understood by educators, can provide them with insight into children’s developmental patterns and help them respond in ways that will support children’s transitions beyond kindergarten. Being cognizant of children’s temperaments can improve teachers’ abilities to provide effective, individualized instruction and consequently promote positive social, cognitive, and academic outcomes.

School Readiness

School readiness is most commonly defined as a prerequisite set of social, emotional, and cognitive competencies that a child must master prior to entering primary school in order to succeed in completing academic tasks (Blair & Raver, 2015). Along with the implementation of performance standards in early childhood educational settings, there also has been a momentous increase in reports of skill deficiencies and prevalent gaps between educational standards and children's academic achievement (Geoffroy et al., 2010). As a result, federal legislation that aims to close achievement gaps has brought school readiness to the forefront of early childhood education and has redefined the ways in which young children are expected to be prepared to enter the public schools (Rafoth, Buchenauer, Crissman, & Halko, 2004).

Academic success in schools is often determined by a range of behaviors, knowledge, and skills, such as following directions, working with others, and engaging in instructional tasks (Britto & Limlingan, 2012). Furthermore, guidelines suggest that students entering kindergarten should be able to write their names, recognize all letters, count to 20 or higher, and read or pretend to read storybooks (Ackerman & Barnett, 2005). However, data from the National Household Education Program Survey (U.S. Census Bureau, 2012) show that as many as 58% of preschool-aged children cannot demonstrate at least three of these abilities, putting many of them behind from an early age. In a recent survey of more than 500 kindergarten teachers across the United States, 44% reported that over half of their students do not enter school with the requisite skills necessary to meet the end-of-year expectations (Curby, 2015). When these deficits are not sufficiently addressed in early childhood years,

they may be classified as learning disabilities in the future and create gaps in achievement that become nearly impossible to close (Coleman, Roth, & West, 2009).

Historically, the gaps between readiness expectations and student performance have been recognized by the No Child Left Behind Act of 2001 (NCLB; 2001) and the Good Start, Grow Smart Initiative of 2002 (GSGS; 2002), which emphasized the importance of entering kindergarten with the requisite skills for success. Preschool initiatives were also included in the most recent implementation of the Every Student Succeeds Act of 2015 (ESSA; 2015), which encourages states to develop, update, or implement a strategic plan that allows for the coordination between existing early childhood care and education programs. Such initiatives have evolved in response to the first National Education Goal (1998) which stated that “by the year 2000, all children in America will start school ready to learn.” Because school readiness skills predict future academic performance, social and emotional competence, and physical health (Hair, Halle, Terry-Humen, Lavelle, & Calkins, 2006), information collected about students’ readiness can be used to drive preventative measures and make decisions about how best to cultivate learning.

School readiness is multifaceted and comprises many aspects of development and skill attainment. The National Education Goals Panel (NEGP; 1998) conceptualized the construct as encompassing five main areas: Physical Well-Being and Motor Development, Social and Emotional Development, Approaches to Learning, Cognitive and General Knowledge, and Language Development and Early Literacy.

Physical Well-Being and Motor Development comprises growth rate, physical fitness, and body physiology, as well as gross, fine, sensory, and oral motor skills. Because of the clear and direct link between children’s health risk factors and academic performance

(Centers for Disease Control and Prevention, 2014), physical and motor skills often are among the first domains that professionals examine closely. *Social and Emotional Development* during early childhood requires the cultivation of self-concept and emotions, theory of mind, social competence, and sustained relationships. Social and emotional competencies are so strongly related to academic performance that educators push for the inclusion of Social/Emotional Learning (SEL) curricula for older primary and secondary grades (Payton et al., 2008). Children's *Approaches to Learning* are defined as their innate preferences to explore and learn in different ways, as well as their adaptive behaviors that provide insight into their abilities to perform activities independently and socialize with others. Research provides evidence that children's approaches to learning predict academic achievement in kindergarten and first grade (Stipek & Ryan, 1997).

The final two readiness areas that are more intuitively linked to academic outcomes are *Cognitive and General Knowledge*, which can be thought of as an understanding of early mathematics and science concepts, and *Language Development and Early Literacy*, which includes basic reading behaviors, writing a name, and recognizing letters. Research strongly supports the influence of these skills on academic performance and suggests that they may be the best predictors of later achievement (Duncan et al., 2007). For example, Piasta, Petscher, and Justice (2012) found that preschool students' performance on a simple letter-naming task in preschool has a strong relationship with their literacy skills at the end of first grade. Research also shows that entering school with high readiness scores in cognitive and language areas not only predicts success in reading and mathematics, but also lowers chances of grade retention or placement in special education (Ramey & Ramey, 2004). Other research has shown that even informal, play-based activities involving knowledge of

quantitative relations, such as ordering blocks from smallest to largest, can predict future mathematics skills (Purpura & Lonigan, 2013).

Children's development of school readiness skills is strongly influenced by internal traits, such that various within-child attributes set the stage for some children to easily transition to formal schooling, while others experience significant challenges (Lemelin et al., 2007). Child temperament is one individual characteristic that influences the quality of education that children receive, thereby impacting their readiness for school entry (Vitiello, Moas, Henderson, Greenfield, & Munis, 2012). For example, research has shown that preschool children's temperaments may be strongly linked to the quality of relationships that they build with their teachers and may therefore interact with the levels of instructional and emotional support that children receive in the classroom (Rudasill, et al., 2016). Though much is known about temperament's role in various aspects of child development, more attention should be given to the construct's role in the attainment of skills that are fundamental for early learning and later academic success.

Child Temperament

Temperament is a complex construct that plays a major role in child development and is considered a key to understanding children's behaviors, emotions, and overall development (Callueng & Oakland, 2014). Defined as a combination of mental and emotional traits to which a person is naturally predisposed, temperament is thought to directly influence an individual's responses and behaviors within their environment. As such, temperament is also considered to be an essential element in the explanation of individual differences (Mervielde & De Pauw, 2012). Although some research shows that temperament may be subject to minor influences in early development, unlike many other

emotional characteristics, it increases in stability and, as such, becomes more resistant to change as individuals age (Joyce, 2010).

There are many different models that attempt to operationalize the construct of temperament (Shiner, et al., 2012). However, most definitions include the terms behavioral style or emotional responsiveness and view temperament as an individual's innate reactions and dispositions when presented with changing situations in daily life. Perhaps the most prominent conceptualization of temperament was introduced by Thomas, Chess, and Birch (1968), who observed psychopathology in many of their child patients, despite the presence of effective parenting practices. In an attempt to understand why multiple children within the same home often reacted differently to the same parenting style, Thomas and colleagues embarked on the New York Longitudinal Study (NYLS; 1968). Their conceptualization of temperament, which acknowledged the inherent nature and value of individual differences, comprised nine temperament traits that allow children to be categorized under three dimensions: easy, difficult, or slow to warm up. The publication of their findings on internal differences has helped caregivers understand why children behave in different ways and has been influential in operationalizing temperament as an individual difference variable that serves as a predictor of educational outcomes (Vitiello, et al., 2012).

Though many temperament researchers center their theories on the work of Thomas, Chess, & Birch (1968), other approaches to temperament have been developed that place a heavier emphasis on neurobiological development. Rothbart and Derryberry's (1981) theory defines temperament as a series of biological differences in reactivity and self-regulation, and specifies that it can be measured in terms of the latency, intensity, and peak of one's reactions. Building on Thomas and colleagues' temperament research, Rothbart (2011)

reconfigured the 9 original traits defined in the NYLS to yield 15 individual dimensions—positive anticipation/approach, high-intensity pleasure, smiling/laughter, activity level, impulsivity, shyness, discomfort, fear, anger/frustration, sadness, soothability, inhibitory control, attentional focusing, low intensity pleasure, and perceptual sensitivity. These dimensions were combined to create three broad types—surgency/extraversion, negative affect, and effortful control.

Rothbart's theory is unique in that it extends temperament beyond the innate indicators of behavioral style and emotional reaction and assumes that the noteworthy differences in individuals' behaviors also stem from their ability to regulate their actions and emotions (Kristal, 2005). Her research on temperament encompasses imaging studies that have shown how genetic and experiential factors combine to help children develop complex neural networks that are essential for efficient learning (Posner & Rothbart, 2005). Such findings imply that the implementation of evidence-based, early-intervention practices may be critical to improving children's later academic outcomes. With the development of research emphasizing the distinctly brain-based, biological aspects of temperament and emotional development, there is an explicit need to explore the implications of this framework as it relates to school performance (National Scientific Counsel on the Developing Child, 2004).

Surgency/Extraversion. According to Rothbart and Derryberry (1981), surgency/extraversion reflects activity level, positive anticipation/approach, high-intensity pleasure, impulsivity, smiling and laughter, and openness. In contrast, a child who is low in surgency and extraversion may have a tendency to have low levels of activity, be cautious in unfamiliar scenarios, experience lower levels of pleasure, and be shy or hesitant to interact

with others. When studied over time, this dimension shows stability in children's internalizing and externalizing behaviors (Rothbart, Derryberry, & Hershey, 2000), and when assessed by questionnaires, it captures a child's demonstration of positive emotions, high activity level, and proclivity for rewards (Evans & Rothbart, 2007). Many studies have shown that surgency is related to a variety of factors, as it correlates positively with math performance in the early elementary grades (O'Connor, Capella, McCormick, & McClowry, 2014) and obesogenic eating behaviors in preschoolers (Leung et al., 2014), and negatively with depressive symptoms at age 10 (Dougherty, Klein, Durbin, Hayden, & Olino, 2010). Considering the links between this trait and various life outcomes, there is no surprise in the fact that it is one of the most prevalent domains examined in temperament and personality measures (Rothbart, Ahadi, & Evans, 2000).

Negative Affect. Negative affect can be conceptualized in terms of a child's emotional responses to the things they experience in the environment. According to Rothbart's model of temperament, it includes dimensions such as discomfort, fear, anger/frustration, sadness, and a lack of soothability (Rothbart & Derryberry, 1981). Conversely, children who are low in negative affect may appear comfortable in a variety of contexts, have low levels of fear, be adaptable, and exhibit strong self-soothing abilities. Although it is difficult to differentiate between the causes of intense negative reactions in newborn infants, the verbal skills that children acquire throughout early childhood allow for interpretation of those emotions, and, therefore, negative affect is more readily seen once children develop language (Rothbart et al., 2000). However, negative affect can still shed light on a child's natural tendencies toward flexibility even from infancy, as children who are high in this trait often show distress under even the smallest changes in routine (Rothbart

2011). Although negative affect may seem initially to be an undesirable trait, it actually encompasses both positive and negative aspects. Furthermore, empirical studies have shown that negative affect relates to both positive and negative outcomes for children. For example, children who are high in negative affect and exhibit more fearful responses early in life are found to be less impulsive, aggressive, and hyperactive in later years, perhaps because fear regulates approach (Rothbart et al., 2000). Some researchers also believe that children with high negative affect may be more susceptible to psychological problems and the development of maladaptive behaviors, due to rigid and constraining coping mechanisms (Block & Kremen, 1996).

Effortful Control. In Rothbart's (1981) temperament theory, effortful control refers to the internal ability to moderate one's complex emotions and impulses (Rothbart, Sheese, & Posner, 2007). Included in this broad domain are impulsivity, inhibitory control, attentional focusing, low intensity pleasure, and perceptual sensitivity, which all relate to control over behaviors and emotions. While children who are high in effortful control tend to demonstrate the ability to regulate their impulses, suppress their natural desires, and delay engaging in gratifying actions, children who are low in this trait tend to demonstrate impulsive behaviors, act without sufficient forethought, and engage in activities that are immediately satisfying regardless of the long-term consequences. Rothbart describes this trait as being critical to developmental processes that shed light on individual differences, including self-regulation, emotional expression, and socialization (Kochanska, Murray, & Harlan, 2000). Effortful control improves through the learning of a specific set of strategies that are obtained with maturation, and therefore, effortful control often increases in stability as children acquire certain regulatory abilities during the first two years of life (Evans &

Rothbart, 2007). However, evidence still suggests that individual differences in effortful control can be detected from the time of birth, and that these differences can predict the levels of regulation that children will show later in life (Gartstein, Bridgett, Young, Panksepp, & Power, 2013). Most children exhibit stabilized levels of effortful control by the time they reach kindergarten, and those who are able to demonstrate inhibitory control by delaying gratification, regulating emotions, and shifting focus from an early age tend to remain stable in these abilities throughout early childhood (Kochanska et al., 2000). Such children have been shown to have a higher chance of the successes associated with self-control later in life (Casey et al., 2011).

Temperament and School Readiness

Temperament provides valuable information to help educators understand children's development, as it influences the relationships they build with others and the skill sets they acquire throughout their formative schooling years. Although existing research identifies temperament as a predictor of academic performance (Coplan, Barber, & Legace-Seguin, 1999), the number of studies is limited, particularly for those involving preschool and kindergarten children. There is a need to expand the literature to better identify and explain the contributions temperament makes to young children's developing readiness skills during preprimary education.

Many researchers have examined the relationships between temperament and various aspects of development. For example, a meta-analysis including a variety of studies that conceptualize temperament in different ways all showed that temperament correlated with school adjustment (Al-Hendawi, 2013). Other studies have shown that Rothbart's conceptualization of temperament, particularly negative affect and effortful control, are

negatively correlated with behavior disorders like ADHD (De Pauw & Mervielde, 2011). Child temperament has also been shown to correlate with peer play (Gagnon et al., 2014) and academic tasks involving literacy and numeracy (Coplan, Barber, & Legace-Seguin, 1999). Additional longitudinal studies have linked preschool temperament and academic outcomes at different grade levels, including math and literacy achievement in kindergarten (Blair & Razza, 2007), reading and math achievement in third grade (Rudasill, Gallagher, & White, 2010), and teacher-assigned grades in sixth grade (DiLalla, Marcus, & Wright-Phillips, 2004).

Keogh (2003) demonstrated that children's activity, distractibility, and persistence each contributed to academic achievement in school-aged children. In their research with older children, Duckworth and Allred (2012) found that traits resembling effortful control during adolescence predicted high school graduation rates and scores on high-stakes academic tests, including the Scholastic Aptitude Test. Research also has shown strong relationships between preschool and kindergarten students' inhibitory control, which tends to include characteristics similar to effortful control, and the acquisition of academic skills (Allan, Hume, Allan, Farrington, & Lonigan, 2014). Using Rothbart and Derryberry's (1981) conceptualization, these particular findings suggest that both surgency/extraversion and effortful control may correlate with different aspects of school readiness.

There is a wealth of empirical data that suggests strong relationships between children's temperament traits and academic performance in older elementary-age students (Duckworth & Allred, 2012; O'Connor et al., 2014; Razza, Martin, & Brooks-Gunn, 2012), but few studies have attempted to examine the relationship between temperament and school readiness in preschoolers and kindergarteners. One recent study in younger children

indicated that preschool students who exhibited high levels of activity and negative reactivity, which are similar to Rothbart & Derryberry's (1981) conceptualization of surgency/extraversion and negative affect, were associated with declines in teacher-child relationship quality over time (McCormick, Tuberville, Barnes, & McClowry, 2014). Using the Early Childhood Longitudinal Study – Kindergarten Cohort (ECLS-KC), another study found that traits related to effortful control—including persistence, emotional regulation, and attention—in kindergarten students were positively related to academic success in first, third, and fifth grade (Li-Grining, Votruba-Drzal, Maldonado-Carreño, & Haas, 2010). These findings provide a reason to believe that temperament, and particularly negative affect and effortful control, also may be significantly related to school readiness.

Research Questions

The research described indicates strong relationships between children's temperaments and their acquired academic knowledge and skills. However, there is a need to expand the literature examining the relationships between multiple aspects of temperament and school readiness skills during the preschool and kindergarten years. Therefore, the purpose of the current study was to ascertain whether a relationship exists between aspects of preschool children's temperaments, as conceptualized by Rothbart and Derryberry (1981), and their early academic performance. Specifically, surgency/extraversion, negative affect, and effortful control were examined in relation to preschool and kindergarten students' language and concept development. It was expected that the findings would provide additional support for associations between the temperament traits and aspects of school readiness. Furthermore, it was hypothesized that the study would shed light on the

complexity of those relationships with significant correlations between different combinations of the two sets of variables.

Method

Participants

Participants included parents of 72 students (32 male, 40 female) ranging in age from 3 to 6 years who attended either preschool or kindergarten classes in one of five elementary schools in a rural school district in the Southeastern United States. Six preschool and 4 kindergarten classrooms were involved in the study. The sample was primarily Caucasian (89.3%) and was reported to reside in low-income households, as measured by free or reduced lunch status (67%). The remaining children were Hispanic (7.1%) or Native American (3.6%).

Measures

Child Behavior Questionnaire, Very Short Form. The Child Behavior Questionnaire, Very Short Form (CBQ-VSF; Putnam & Rothbart, 2006) is a caregiver rating scale of child temperament designed to assess the behaviors of children from ages 3 to 8 years. Based on the original Child Behavior Questionnaire (CBQ; Rothbart, Ahadi, & Hershey, 1994; Rothbart, Ahadi, Hershey, & Fisher, 2001), both the Short and Very Short forms were developed with a standardization sample of 468 children ages 3 to 8 years living in the United States who were predominately Caucasian and of a wide range of socioeconomic statuses. When completing the CBQ-VSF, parents are asked to provide rankings on 36 items using a Likert-type scale (1 = *extremely untrue of your child* to 7 = *extremely true of your child*). Although the CBQ yields scores for 15 scales, the CBQ-VSF provides scores on three broad scales that correspond with Rothbart's three main temperament factors—Surgency/Extraversion (12 items), Negative Affect (12 items), and

Effortful Control (12 items). Overall, the internal reliability coefficients found within the CBQ-VSF normative sample were acceptable, with alpha coefficients of .73, .66, and .78 for the Surgency/Extraversion, Negative Affect, and Effortful Control scales, respectively. In comparison, the standard form of the CBQ reports reliability coefficients of .83 for Surgency/Extraversion, .85 for Negative Affect, and .79 for Effortful Control. In the current study, the reliability coefficients were found to be .53, .81, and .80 for Surgency/Extraversion, Negative Affect, and Effortful Control, respectively.

Developmental Indicators of Academic Learning, Fourth Edition. The Developmental Indicators for the Assessment of Learning, Fourth Edition (DIAL-4; Mardell & Goldenberg, 2011) is a standardized assessment tool designed to determine the academic, motor, and social skill development in children ages 2 years, 6 months to 5 years, 11 months. The DIAL-4 measures five areas of development, including three performance-based areas—Language, Concepts, and Motor—and two areas rated by teachers and caregivers—Self-Help and Social-Emotional. Each of the areas measured is aligned with the school readiness standards published by the National Association for the Education of Young Children (NAEYC; 2009), the National Education Goals Panel (NEGP; 1990) and the Head Start Child Development and Early Learning Framework (HSCDEL; 2010). As a result, each of the five measures is shown to better predict academic success than previous versions (Mardell & Goldenberg, 2011).

The mean test-retest reliability coefficient was .80, and measures of internal test consistency yielded coefficients ranging from .84 to .94. Of relevance to the current study, the reliability coefficients for the Language (6 items) and Concepts (7 items) subscales were .92 and .94 respectively. The current data yielded coefficients of .79 for Concepts and .75

for Language. When compared to other measures of early childhood development and school readiness, the DIAL-4 has demonstrated high rates of construct validity, with coefficients ranging from .55 to .83 when compared to other measures.

Procedure

Permission to conduct this study was obtained through the public school system. Written consent was provided by the superintendent, and approval was granted by the Board of Education (see Appendix A). The principals of all elementary schools within the school district provided verbal consent for the researchers to recruit participants and collect demographic data from children's school records. To obtain permission from parents, packets including the informed consent form (See Appendix B) and Child Behavior Questionnaire, Very Short Form (CBQ-VSF; See Appendix C) were given to teachers, who sent them home with their students. Parents who were interested in participating returned the consent form and rating scale to the teachers in sealed envelopes that were provided by the researchers.

The current study was a part of a pilot study that examined the effectiveness of a temperament-based intervention program in a rural, preschool setting. Data for the current study was collected at baseline prior to the implementation of the intervention. Approval by the Institutional Review Board was granted (see Appendix D) and the research was conducted in accordance with the ethical standards set forth by Appalachian State University's Institutional Review Board, the Office of Student Research, and the American Psychological Association's *Ethical Principles of Psychologist and Code of Conduct*.

Results

Descriptive Statistics

Prior to conducting statistical analyses of the data, the distribution of scores was examined in order to identify issues that may pose threats to the assumptions of canonical correlation and multiple regression. Assumptions concerning multivariate normality were met.

Table 1 presents the descriptive statistics and Pearson product-moment correlation and alpha reliability coefficients for all variables examined by the CBQ-VSF and the DIAL-4. When considering the generally-accepted standards (Salvia, Ysseldyke, & Bolt, 2009), the internal reliability coefficients for both Negative Affect ($\alpha = .81$) and Effortful Control ($\alpha = .80$) were found to be acceptable, while Surgency/Extraversion ($\alpha = .53$) was relatively low. Both the Language and Concepts scales were also found to have acceptable levels of internal reliability, with coefficients of .75 and .79 respectively.

An examination of the Pearson product-moment correlations between the temperament and school readiness variables revealed one positive statistically significant relationship between DIAL Concepts and CBQ Surgency/Extraversion ($r = .24, p < .05$).

Comparisons of the preschool and kindergarten students' school readiness scores revealed significant differences between groups ($t = 4.85, p < .001$). Therefore, correlations for each grade level were analyzed separately. For the preschool sample, a moderate, positive correlation between Surgency/Extraversion and Concepts was found ($r = .42, p < .01, N = 41$). For the kindergarten sample, a moderate, negative correlation between Negative Affect and Concepts was also discovered ($r = -.44, p < .05, N = 31$). The Effortful Control and the Language subscales did not correlate significantly with any other variable in either the overall or separate grade level samples.

Canonical Correlation Analyses

Using the three temperament variables as predictors of the two school readiness variables, canonical correlation analysis was conducted to evaluate the multivariate shared relationship between child temperament (surgency/extraversion, negative affect, and effortful control) and school readiness (language and concepts). The analysis yielded two functions with squared canonical correlations (R_c^2) of .037 and .006 for each successive function. Collectively, the full model across all functions was not found to be statistically significant, Wilks's $\lambda = .956$, $F(6, 126) = .473$, $p = .828$. Because Wilks's λ represents the variance unexplained by the model, the inverse of λ yields the full model effect size in an r^2 metric. Thus, for the set of two canonical functions, the effect size $r^2 = .04$ indicates that the full model explained only 4% of the variance shared between the variable sets. A dimension reduction analysis of the two functions revealed Wilks's lambdas of .956 ($p = .828$) and .993 ($p = .809$).

Discussion

The purpose of this study was to examine the complex relationships between child temperament and school readiness. In particular, it was hypothesized that three different aspects of temperament—surgency/extraversion, effortful control, and negative affect—would be associated with students' performance in two areas of school readiness—concepts, or early number sense, and language, or early literacy skills. Although the extant literature supports that proposition, only one significant correlation was observed between the variables. Canonical correlation analysis was selected as an appropriate method to further clarify the expected relationships among these multi-dimensional variables. While the results of the canonical model did not support the hypothesized complex relationships among these combinations of variables, a few bivariate correlations were observed when examining

results across grade levels. Although limited, these findings may warrant further consideration.

School Readiness

In general, the present findings did not support the hypothesized relationships between child temperament and language- or concept-related school readiness skills. Although a pattern of associations did not emerge, one significant correlation was observed between surgency/extraversion and concept development. When the sample was divided by grade levels, the same relationship was found for the preschoolers, but not for the kindergarten students. However, within the grade-specific analyses, an additional significant correlation between negative affect and concept development was also discovered. These limited findings are surprising, given the extensive literature supporting the relationships between specific temperament traits and academic performance over time (Zhou, Main, & Wang, 2010; Oliver, Guerin, & Gottfried, 2007). For example, previous studies have found relationships between elementary school children's temperaments and their report card grades (VanSchyndel, Eisenberg, Valiente, & Spinrad, 2015), their performance on standardized math assessments (Blair, Ursache, & Vernon-Feagans, 2015), and their scores on state-wide academic achievement tests (Zimmerman & Kitsantas, 2014). Though the literature is not as extensive, links have also been examined in younger children, as studies show that temperament measured in infants may predict preschool-aged children's acquisition of school readiness skills in the areas of color, letter, and number knowledge (Gartstein, Putnam, & Kliwer, 2016). Furthermore, research has also shown that in kindergarten students, temperament scores predict scores on school readiness measures

(Schoen & Nagle, 1994). Although the current study examined similar variables, no significant relationships were discovered.

A review of previous studies examining the relationships between child temperament and academic achievement shows that temperament is more strongly correlated with children's reading than math skills (Al-Hendawi, 2013). In some cases, even when children's scores on reading measures were found to correlate significantly with measures of their temperaments, their math scores were not (Bramlett, Scott, & Rowell, 2000). Interestingly, the results from the present study found that children's development of early number sense, which is a precursor to math, was the only aspect of school readiness to correlate with temperament.

The lack of findings may be attributed in part to the complexity of factors that may influence school readiness, which may be relevant for the current sample. Prior to entering school, young children may not be exposed to formal educational practices without strong family support. However, research still suggests that many children and families are not provided with the community resources needed to be able to promote school readiness skills (Redding & Walberg, 2012). Furthermore, studies show that risk factors associated with poverty, including minority status, single-parent status, parental harshness, and parental depression, have strong, negative correlations with school readiness (Pratt, McClelland, Swanson, & Lipscomb, 2016). It is possible then, that because many of the children included in the current study were considered to be at an economic disadvantage, they may also face many barriers to acquiring school readiness skills that often occur in tandem with poverty. Additionally, children in rural schools may be further at risk for delays in their school readiness skills, as findings suggest that rural children lag behind their urban and suburban

counterparts on educational outcomes (Rural Families Data Center, 2004). The combination of rural status and poverty as risk factors places some children at a substantial risk for challenges at school. As such, the findings may have been influenced by the participants' exposure to any number of these risk factors.

Although psychological and behavioral correlates have traditionally been the focus of studies predicting school performance, studies conducted in more recent years have attempted to examine environmental factors that may impact educational performance (Tobias, 2010). For example, factors such as prior educational experience (Banai & Perin, 2016) and teachers' interaction styles (Viljaranta et al., 2015) have been found to be stronger correlates of academic performance than individual differences. Furthermore, there is evidence to suggest that even uncontrollable factors such as teachers' age and both teacher and student gender may moderate the relationships between temperament and academic achievement (Mullola et al., 2011). Given this information, it may be worth investigating the extent to which environmental variables exist within other samples and what influence they may have had in moderating the school readiness outcome variables.

Child Temperament

Though temperament has been shown to predict academic performance, the results of this study were not consistent with those findings. However, when considering each temperament dimension examined, it appears that there could be a number of reasons as to why the statistical analyses conducted did not yield significant results. Because of the complexity captured within each dimension, it is important to consider the potential factors that may have impacted the results within each.

Surgency/Extraversion. Previous studies have shown a distinct relationship between academic achievement and behaviors associated with surgency and extraversion, including high activity levels, engagement with the environment, positive emotion, and impulsivity. Specifically, studies show that parent reports of surgency may be good predictors of academic competence in elementary-aged children (Bramlett et al., 2000). In preschool students, interest and engagement in their surroundings has also been shown to relate specifically to the acquisition of early math skills (Doctoroff, Fisher, Burrows, & Edman, 2016; Rabiner, Godwin, & Dodge, 2016). These findings appear to be consistent with the results of the current study, as a significant correlation emerged between surgency/extraversion and conceptual knowledge.

In addition to yielding an overall positive correlation between surgency/extraversion and conceptual knowledge, the results of the current study suggest that there may be a difference between the ages at which this relationship manifests. In particular, surgency and extraversion appear to have a moderately strong, positive relationship with conceptual knowledge in the preschool-aged children in the sample, but within the kindergarten sample, no significant relationships between those variables were detected. Previous studies have yielded similar findings, as behaviors associated with higher levels of surgency and extraversion in infants have been found to predict letter identification and overall higher school readiness scores in preprimary years (Gartstein et al., 2016). Conversely, in kindergarten through third grade students, higher levels of surgency have also been found to be linked to higher levels of task avoidance and lower levels of academic performance (Hirvonen, Torppa, Nurmi, Eklund, & Ahonen, 2016). These conflicting findings may in some ways be reflective of the present findings. Because the results suggest that the positive

correlation between surgency/extraversion may be stronger for the preschool students within the current sample than it was for the kindergarten students, it is possible that, as students age, their individual differences may begin to interact with their academic performance in different ways.

Negative Affect. A review of previous studies of the relationships between negative affect and academic achievement shows that this temperament domain may be among those that are most strongly correlated with achievement (Al-Hendawi, 2013). In particular, negative affect has been found to have strong, negative correlations with children's school adjustment (Bouffard, Roy, and Vezeau 2005), performance on classroom tests (Chin, Williams, Taylor, & Harvey, 2017), and grade point averages (Laidra, Pullmann, & Allik, 2007). In preschool students, negative affect, which has been defined as encompassing anger, frustration, lack of soothability, and discomfort, has been shown to predict performance on pre-academic tasks and decision making (Garon & Moore, 2006). Despite these consistent findings across multiple studies, results from the current study yielded no significant associations between negative affect and readiness skills for the overall sample.

When considering the data by separate grade levels, the results from the current study suggest that a relationship between negative affect and conceptual knowledge may only begin to emerge as children reach kindergarten. This information suggests that age may be an important factor to consider when examining the interactions between temperament and academic performance. These findings are surprising, given that previous cross-sectional studies show that these relationships remain stable over time (Laidra, Pullmann, & Allik, 2007). However, other studies have shown that negative affect may predict changes in children's task avoidance, a behavior which may also impact the acquisition of academic

skills (Hirvonen et al., 2016). Given this information, it is possible that, as the demands in the educational environments change from preschool to kindergarten, the extent to which temperament interacts with academic performance may also increase with time.

Effortful Control. In multiple studies, effortful control has been shown to predict academic achievement in the early elementary school years (VanSchyndel et al., 2015; Zhou et al., 2010). Even in preschool children, multiple studies have shown strong, significant correlations between facets of emotional self-regulation and the learning of prerequisite skills in both reading and mathematics (Fernández-Vilar & Carranza, 2013). However, the findings from the current study indicated no significant associations between effortful control and either conceptual knowledge or language development.

Although temperament is a trait that is generally considered stable throughout the lifetime, there is evidence to suggest that it is subject to change in young children as their brains develop (Joyce, 2010). In her temperament theory, Rothbart (2011) conceptualizes self-regulation as a critical component that modulates behaviors associated with children's tendencies to react to different scenarios. As such, she captures the idea of regulation through the construct of effortful control, which is defined as the ability to inhibit what might be a dominant response in order to perform a subdominant response (Rothbart, Ahadi, & Evans, 2000). Though children may have a natural predisposition to demonstrate self-regulation, studies show that effortful control may continue to develop between the ages of three and six years (Kochanska, Murray, Jacques, Koeng, & Vandergeest, 1996). During these years of development, studies have shown that this trait may be minimally influenced by parenting styles and contextual risk-factors, including ethnic or racial minority status,

poverty, household density, single-parent status, number of household moves in child's lifetime, negative life events, and parental depression (Lengua, Honorado, & Bush, 2007).

Because the sample in this study included children ages three to six years, it is possible that the Child Behavior Questionnaire, Very Short Form (CBQ-VSF; Putnam & Rothbart, 2006) may not adequately reflect the levels of effortful control that may still be developing in these children. The lack of findings in this study may also be due to the demographic characteristics of the sample, poverty and rural status, as these contextual risk factors may also have influenced the levels of effortful control captured by the CBQ-VSF.

Summary of Findings

Overall, the findings revealed that, while complex analyses of the relationship between child temperament and school readiness were not observed within the entire study sample, emerging relationships between the constructs appear to be present. In particular, the discovery of a significant link between surgency/extraversion and early concept development supports a relationship that a more complex, multivariate analysis may not be able to depict. Furthermore, when considering the results examined by grade level, differences in the correlations identified suggest that age may be another factor influencing the complex relationship between child temperament and school readiness. These results suggest that, while child temperament may not be a strong predictor of school readiness across preschool and kindergarten students collectively, it may be one factor worth consideration in determining what may influence young children's acquisition of early math and language skills.

Limitations

There are several limitations in the present study that are worth consideration. First, because of the demographics of the population in the area in which the data was collected, the sample was also relatively homogeneous, as the majority of the participants were Caucasian, resided in low-income households, and lived in a rural community. While the sample may have reflected the community in which the information was gathered, this homogeneity limits the generalizability of the results. Examining these relationships in a more diverse sample may increase the likelihood of finding significant results.

The results may also be limited by the methodological decision to utilize a singular measure of child temperament. Studies have shown that relying solely on one parent rating of child temperament may introduce unintended measurement error, as environmental stressors may temporarily distort parents' perceptions of their children's behaviors (Field, Morrow, & Adelstein, 1993; Mebert, 1991). Furthermore, previous studies have also shown that parent ratings of child temperament may not correlate as strongly with academic achievement as teacher ratings do (Bramlett et al., 2000). Therefore, using ratings provided by a third party, such as teachers or other caregivers, or observing the behaviors of participants in their natural environments, may have provided more comprehensive information about the children's temperaments and increased the validity of the parent ratings. Additionally, despite its acceptable reliability, the use of the Very Short Form may not have provided adequate coverage of the construct. An examination of the reliability of the current data from the Child Behavior Questionnaire, Very Short Form (CBQ-VSF) also shows that, while the Negative Affect and Effortful Control scales showed acceptable levels of reliability, the questions measuring Surgency/Extraversion demonstrated low internal

reliability. Because the parent CBQ-VSF ratings were the only measure of child temperament examined, there is no way to determine whether or not the low reliability may have compromised the results of this study.

Future Research Directions

As previously mentioned, there are multiple theoretical and methodological issues within the present study that may warrant more explicit consideration in future research endeavors. For example, to avoid any unintended interactions between the constructs measured and subgroup-specific risk factors (e.g., socioeconomic status), related studies may wish to develop a broader sample that includes participants from a variety of economic, racial, ethnic, geographic, and educational backgrounds. Furthermore, researchers considering the child temperament and school readiness may choose to utilize multiple methods of data collection to ensure that the measurement tools reliably reflect the constructs.

Though school readiness measures are generally able to provide brief, valid information about children's academic skills at any given time, they may not encompass the dynamic nature of the construct, as school readiness is a fluid construct that is subject to change at varying rates that depend on numerous biological, psychological, and social factors (Blair & Raver, 2015). As such, utilizing a single set of scores to depict students' acquisition of basic academic skills may not provide adequate information needed to analyze the true complexity of the relationships between the constructs examined. Therefore, future studies may wish to consider a more dynamic conceptualization of school readiness as the outcome variable. For example, in addition to computing the correlations between child temperament and school readiness scores at a single point in time, future studies may wish to collect

longitudinal performance on the same measure so that participants' rates of improvement can be considered as an additional variable. Previous research has shown that child temperament may predict cross-sectional performance, but that it may also successfully predict changes in academic performance over time (Hirvonen et al., 2016). Furthermore, studies show that measuring academic trajectories using growth models may be a more comprehensive and valuable means of measuring academic performance (Shin, 2012). Given these findings, considering changes in performance over time may yield more significant and meaningful results. Because the current study also provides some limited evidence of the developmental differences that may occur in the early primary years, considering the way in which temperament relates to academic growth may be of particular relevance to preschool and kindergarten children.

Conclusion

Although the primary purpose of the study was to shed light on the complexity of the relationships between child temperament and school readiness, the results suggest that no significant relationships exist between different combinations of the two sets of variables examined. However, the results may add to the existing literature on the associations between temperament and school readiness, as more simple analyses show that surgency/extraversion may be related to conceptual knowledge. Furthermore, an analysis of these associations within each grade level suggests that there may be differences in the way that temperament relates to basic academic skills within the different grades. Although the findings were limited, the existing data do present relationships that may warrant additional investigation.

Table 1

Descriptive Statistics, Coefficient Alphas, and Correlations for DIAL-4 and CBQ-VSF Scales

	Concepts	Language	Surgency/ Extraversion	Negative Affect	Effortful Control
Combined Sample (N=72)					
DIAL-4 Concepts	<i>.79</i>				
DIAL-4 Language	<i>.72</i>	<i>.75</i>			
Surgency/Extraversion	.24*	<i>.17</i>	<i>.53</i>		
Negative Affect	<i>-.06</i>	<i>-.04</i>	<i>-.13</i>	<i>.81</i>	
Effortful Control	<i>.01</i>	<i>-.04</i>	<i>.02</i>	<i>-.14</i>	<i>.80</i>
<i>Mean</i>	23.83	23.62	4.66	4.02	5.24
<i>SD</i>	5.54	5.80	.88	1.05	.88
Preschool Sample (N=41)					
DIAL-4 Concepts	<i>.79</i>				
DIAL-4 Language	.66**	<i>.53</i>			
Surgency/Extraversion	.42**	<i>.09</i>	<i>.75</i>		
Negative Affect	<i>.18</i>	<i>.15</i>	<i>-.06</i>	<i>.81</i>	
Effortful Control	<i>-.10</i>	<i>-.11</i>	<i>.12</i>	<i>.50</i>	<i>.84</i>
<i>Mean</i>	21.51	20.39	4.58	4.02	5.24
<i>SD</i>	5.45	4.32	.87	.97	.94
Kindergarten Sample (N=31)					
DIAL-4 Concepts	<i>.65</i>				
DIAL-4 Language	.59**	<i>.75</i>			
Surgency/Extraversion	<i>-.14</i>	<i>.10</i>	<i>.28</i>		
Negative Affect	-.44*	<i>-.21</i>	<i>-.20</i>	<i>.82</i>	
Effortful Control	<i>.31</i>	<i>-.09</i>	<i>-.14</i>	<i>-.19</i>	<i>.76</i>
<i>Mean</i>	26.90	20.39	4.76	4.02	5.24
<i>SD</i>	5.45	4.32	.89	1.17	.80

Note. Entries on the main diagonal, in italics, represent Cronbach's coefficient alpha.

* $p < .05$ ** $p < .01$

References

- Ackerman, D. J., & W.S. Barnett. (2005). Prepared for kindergarten: What does “readiness” mean? *NIEER Policy Report*. Online: <http://nieer.org/docs/index.php?DocID=121>.
- Al-Hendawi, M. (2013) Temperament, school adjustment, and academic achievement: Existing research and future directions. *Educational Review*, 65, 177-205.
doi:10.1080/00131911.2011.648371
- Allan, N. P., Hume, L. E., Allan, D. M., Farrington, A. L., & Lonigan, C. J. (2014). Relations between inhibitory control and the development of academic skills in preschool and kindergarten: A meta-analysis. *Developmental Psychology*, 50, 2368-2379.
doi:10.1037/a0037493
- Banai, B., & Perin, V. (2016). Type of high school predicts academic performance at university better than individual differences. *Plos ONE*, 11, 1-16.
doi:10.1371/journal.pone.0163996
- Blair, C. & Raver, C. C. (2015). School readiness and self-regulation: A developmental psychobiological approach. *Annual Review of Psychology*, 66, 711-731.
- Blair, C., & Razza, R. P. (2007). Relating Effortful Control, Executive Function, and False Belief Understanding to Emerging Math and Literacy Ability in Kindergarten. *Child Development*, 78, 647-663. doi:10.1111/j.1467-8624.2007.01019.x
- Blair, C., Ursache, A., & Vernon-Feagans, L. (2015). Multiple Aspects of Self-Regulation Uniquely Predict Mathematics but Not Letter-Word Knowledge in the Early Elementary Grades. *Developmental Psychology*, 51, 459-472.

- Block, J., & Kremen, A. M. (1996). IQ and ego-resiliency: Conceptual and empirical connections and separateness. *Journal of Personality and Social Psychology, 70*, 349–361.
- Bramlett, R. K., Scott, P., & Rowell, R. K. (2000). A comparison of temperament and social skills in predicting academic performance in first graders. *Special Services in the Schools, 16*, 147–58.
- Britto, P. R., & Limlingan, M. C. (2012). *School readiness and transitions*. New York, NY: UNICEF.
- Bouffard, T., Roy, M., & Vezeau, C. (2005). Self-perceptions, temperament, socioemotional adjustment and the perceptions of parental support of chronically underachieving children. *International Journal of Educational Research, 43*, 215-235.
- Callueng, C. & Oakland, T. (2014). If you do not know the child's temperament, you do not know the child. *Estudios de Psicología, 31*, 3-13. doi:10.1590/0103-166X2014000100001
- Casey, B. J., Somerville, L. H., Gotlib, I. H., Ayduk, O., Franklin, N. T., Askren, M. K., & ... Shoda, Y. (2011). Behavioral and neural correlates of delay of gratification 40 years later. *Proceedings of the National Academy of Sciences of the United States of America, 108*, 14998-15003. doi:10.1073/pnas.1108561108
- Centers for Disease Control and Prevention. (2014). *Health and academic achievement*. Atlanta, GA: U.S. Department of Health and Human Services.
- Chin, E. C. H., Williams, M. W., Taylor, J. E., & Harvey, S. T. (2017). The influence of negative affect on test anxiety and academic performance: An examination of the tripartite model of emotions. *Learning and Individual Differences, 54*, 1-8.

- Coleman, M. R., Roth, F. P., & West, T. (2009). *Roadmap to Pre-K RTI: Applying response to intervention in preschool settings*. New York, NY: National Center for Learning Disabilities.
- Coplan, R. J., Barber, A. M., & Lagace-Seguin, D. G. (1999). The role of child temperament as a predictor of early literacy and numeracy skills in preschoolers. *Early Childhood Research Quarterly, 14*, 537-53.
- Curby, T. W. (2016, October). *The kindergarten teacher survey*. APA Education Leadership Conference. Washington, DC.
- De Pauw, S. S., & Mervielde, I. (2011). The role of temperament and personality in problem behaviors of children with ADHD. *Journal Of Abnormal Child Psychology, 39*, 277-291. doi:10.1007/s10802-010-9459-1
- DiLalla, L. F., Marcus, J. L., & Wright-Phillips, M. V. (2004). Longitudinal effects of preschool behavioral styles on early adolescent school performance. *Journal Of School Psychology, 42*, 385-401. doi:10.1016/j.jsp.2004.05.002
- Doctoroff, G. L., Fisher, P. H., Burrows, B. M., & Edman, M. T. (2016). Preschool children's interest, social–emotional skills, and emergent mathematics skills. *Psychology in Schools, 53*, 390-403.
- Dougherty, L. R., Klein, D. N., Durbin, C. E., Hayden, E. P., & Olino, T. M. (2010). Temperamental positive and negative emotionality and children's depressive symptoms: A longitudinal prospective study from age three to age ten. *Journal of Social and Clinical Psychology, 29*, 464-490

- Duckworth, A., & Allred, K. M. (2012). Temperament in the classroom. In M. Zentner & R. L. Shiner (Eds.), *Handbook of temperament* (pp. 627-644). New York, NY: Guilford Press.
- Duncan, G. J., Dowsett, C. J., Claessens, A., Magnuson, K., Huston, A. C., Klebanov, P., . . . Japel, C. (2007). School readiness and later achievement. *Developmental Psychology, 43*, 1428–1446.
- ESSA (2015). Every Student Succeeds Act of 2015, Pub. L. No. 114-95 § 114 Stat. 1177 (2015-2016).
- Evans, D. E., & Rothbart, M. K. (2007). Developing a model for adult temperament. *Journal of Research in Personality, 41*, 868-888.
- Fernández-Vilar, M. A., & Carranza, J. A. (2013). Temperament in the school context: A historical review. *European Journal of Psychology of Education, 28*, 923-944.
doi:<http://dx.doi.org/10.1007/s10212-012-0147-0>
- Field, T., Morrow, C., & Adelstein, D. (1993). Depressed mothers' perceptions of infant behavior. *Infant Behavioral Development, 16*, 98-101.
- Gagnon, S. G., Huelsman, T. J., Reichard, A. E., Kidder-Ashley, P., Griggs, M. S., Struby, J., & Bollinger, J. (2014). Help me play! Parental behaviors, child temperament, and preschool peer play. *Journal of Child and Family Studies, 23*, 872-884.
doi:10.1037/t05579-000
- Gagnon, S. G., Kidder-Ashley, P., & Nickerson, A. B. (2007). Assessment of school and classroom environment. In B. A. Bracken & R. J. Nagle (Eds.), *Psychoeducational assessment of preschool children* (pp. 173-193). Mahwah, NJ: Lawrence Erlbaum Associates.

- Garon, N., & Moore, C. (2006). Negative Affectivity Predicts Individual Differences in Decision Making for Preschoolers. *Journal Of Genetic Psychology, 167*, 443-462.
- Gartstein, M. A., Bridgett, D. J., Young, B. N., Panksepp, J. and Power, T. (2013). Origins of effortful control: Infant and parent contributions. *Infancy, 18*, 149-183.
doi:10.1111/j.1532-7078.2012.00119.x
- Gartstein, M. G., Putnam, S. S., & Kliever, R. R. (2016). Do infant temperament characteristics predict core academic abilities in preschool-aged children? *Learning & Individual Differences, 45*, 299-306. doi:10.1016/j.lindif.2015.12.022
- Geoffroy, M., Côté, S. M., Giguère, C., Dionne, G., Zelazo, P. D., Tremblay, R. E., & ... Séguin, J. R. (2010). Closing the gap in academic readiness and achievement: the role of early childcare. *Journal of Child Psychology & Psychiatry, 51*, 1359-1367.
doi:10.1111/j.1469-7610.2010.02316.x
- Good start, grow smart: The Bush administration's early childhood initiative.* (2002). Retrieved May 2, 2017 from <https://georgewbush-whitehouse.archives.gov/infocus/earlychildhood/text/sect1.html>
- Hair, E., Halle, T., Terry-Humen, E., Lavelle, B., & Calkins, J. (2006). Children's school readiness in the ECLS-K: Predictions to academic, health, and social outcomes in first grade. *Early Childhood Research Quarterly, 21*, 431-454.
doi:10.1016/j.ecresq.2006.09.005
- Hirvonen, R., Torppa, M., Nurmi, J., Eklund, K., & Ahonen, T. (2016). Early temperament and age at school entry predict task avoidance in elementary school. *Learning and Individual Differences, 47*, 1-10. doi:10.1016/j.lindif.2015.12.012
- Joyce, D. (2010). *Essentials of temperament assessment*. Hoboken, NJ: John Wiley & Sons.

Keogh, B. K. (2003). *Temperament in the classroom: Understanding individual differences*.

Baltimore, MD: P. H. Brookes.

Kristal, J. (2005). *The temperament perspective: Working with children's behavioral styles*.

Baltimore, MD: Brookes.

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, 26, 220-232.

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*, 490-507.

Laidra, K. Pullmann, H. & Allik, J. (2007). Personality and intelligence as predictors of academic achievement: A cross-sectional study from elementary to secondary school.

Personality and Individual Differences, 42, 441-451.

Lemelin, J. P., Boivin, M., Forget-Dubois, N., Dionne, G., Se'guin, J. R.,...Brendgen, M. R.

(2007). The genetic environmental etiology of cognitive school readiness and later academic achievement in early childhood. *Child Development, 78*, 1855–1869.

Lengua, L. J., Honorado, E., & Bush, N. R. (2007). Contextual risk and parenting as

predictors of effortful control and social competence in preschool children. *Journal of Applied Developmental Psychology, 28*, 40 – 55.

Leung, C. Y., Lumeng, J. C., Kaciroti, N. A., Chen, Y. P., Rosenblum, K., & Miller, A. L.

(2014). Surgency and Negative Affectivity, but not Effortful Control, are Uniquely Associated with Obesogenic Eating Behaviors among Low-Income Preschoolers. *Appetite, 78*, 139-146. <http://doi.org/10.1016/j.appet.2014.03.025>

- Li-Grining, C., Votruba-Drzal, E., Maldonado-Carreño, C., & Haas, K. (2010). Children's early approaches to learning and academic trajectories through fifth grade. *Developmental Psychology, 46*, 1062-1077. doi:10.1037/a0020066
- Mardell, C., & Goldenberg, D. S. (2011). *Developmental Indicators for the Assessment of Learning (4th ed.) manual*. Bloomington, MN: NCS.
- McCormick, M. P., Turbeville, A. R., Barnes, S. P., & McClowry, S. G. (2014). Challenging temperament, teacher–child relationships, and behavior problems in urban low-income children: A longitudinal examination. *Early Education And Development, 25*, 1198-1218. doi:10.1080/10409289.2014.915676
- Mebert, C. J. (1991). Dimensions of subjectivity in parents' ratings of infant temperament. *Child Development, 62*, 352-361.
- Mervielde, I., & De Pauw, S. S. W. (2012). Models of child temperament. In M. Zentner & R. L. Shiner (Eds.), *Handbook of temperament* (pp. 21-40). New York, NY: Guilford Press.
- Mullola, S., Jokela, M., Ravaja, N., Lipsanen, J., Hintsanen, M., Alatupa, S., & Keltikangas-Jarvinen, L. (2011). Associations of student temperament and educational competence with academic achievement: The role of teacher age and teacher and student gender. *Teaching and Teacher Education, 27*, 942–951. doi:10.1016/j.tate.2011.03.005
- National Education Goals Panel. (1998). *Ready schools*. Washington, DC: US Government Printing Office

- National Scientific Council on the Developing Child (2004). *Children's Emotional Development Is Built into the Architecture of Their Brains: Working Paper No. 2*.
<http://www.developingchild.net>
- Neisworth, J. T., & Bagnato, S. J. (2005). DEC recommended practices: Assessment. In S. Sandall, M. L. Hemmeter, B. J. Smith, & M. McLean (Eds.), *DEC recommended practices: A comprehensive guide for practical application* (pp. 45-69). Longmont, CO: Sopris West.
- No Child Left Behind (NCLB) Act of 2001, Pub. L. No. 107-110, § 115, Stat. 1425 (2002).
- O'Connor, E. E., Cappella, E., McCormick, M. P., & McClowry, S. G. (2014). Enhancing the academic development of shy children: A test of the efficacy of INSIGHTS. *School Psychology Review, 43*, 239-259.
- Oliver, P. H., Guerin, D. W., & Gottfried, A. W. (2007). Temperamental task orientation: Relation to high school and college educational accomplishments. *Learning and Individual Differences, 17*, 220–230. doi:10.1016/j.lindif.2007.05.004
- Payton, J., Weissberg, R. P., Durlak, J. A., Dymnicki, A. B., Taylor, R. D., Schellinger, K. B., & Pachan, M. (2008). *The positive impact of social and emotional learning for kindergarten to eighth-grade students: Findings from three scientific reviews*. Chicago, IL: Collaborative for Academic, Social, and Emotional Learning.
- Piasta, S. B., Petscher, Y., & Justice, L. M. (2012). How many letters should preschoolers in public programs know? The diagnostic efficiency of various preschool letter-naming benchmarks for predicting first-grade literacy achievement. *Journal Of Educational Psychology, 104*, 945-958.

- Posner, M. I., & Rothbart, M. K. (2005). Influencing brain networks: Implications for Education. *Trends in Cognitive Science*, 9, 99-103. doi:10.1016/j.tics.2005.01.007
- Pratt, M. E., McClelland, M. M., Swanson, J., & Lipscomb, S. T. (2016) Family risk profiles and school readiness: A person-centered approach. *Early Childhood Research Quarterly*, 36, 462-474.
- Purpura, D. J., & Lonigan, C. J. (2013). Informal numeracy skills: The structure and relations among numbering, relations, and arithmetic operations in preschool. *American Educational Research Journal*, 50, 178-209.
- Putnam, S. P., & Rothbart, M. K. (2006). Development of short and very short forms of the Children's Behavior Questionnaire. *Journal of Personality Assessment*, 87, 102-112.
- Rabiner, D. L., Godwin, J., & Dodge, K. A. (2016). Predicting academic achievement and attainment: the contribution of early academic skills, attention difficulties, and social competence. *School Psychology Review*, 45, 250-267.
- Rafoth, M. A., Buchenauer, E. L., Crissman, K. K. & Halko, J. L. (2004). School readiness-Preparing children for kindergarten and beyond: Information for parents. *National Association of School Psychologists*, 31, 1-3.
- Ramey, C. T., & Ramey, S. L. (2004). Early Learning and school readiness: can early intervention make a difference? *Merrill-Palmer Quarterly*, 50, 471-491.
- Razza, R. A., Martin, A., & Brooks-Gunn, J. (2012). The Implications of early attentional regulation for school success among low-income children. *Journal Of Applied Developmental Psychology*, 33, 311-319.
- Redding, S., & Walberg, H. J. (2012). *Promoting learning in rural schools*. Lincoln, IL: Center on Innovation & Improvement.

- Rothbart, M. (2011). *Becoming who we are: temperament and personality in development*. New York, New York: Guilford Press.
- Rothbart, M. K. (1981). Measurement of temperament in infancy. *Child Development, 52*, 569-578.
- Rothbart, M. K., Ahadi, S. A., & Evans, D. E. (2000). Temperament and personality: Origins and outcomes. *Journal of Personality and Social Psychology, 78*, 122-135.
- Rothbart, M., Ahadi, S., & Hershey, K. (1994). Temperament and social behavior in childhood. *Merrill-Palmer Quarterly, 40*, 21-39.
- Rothbart, M. K., Ahadi, S. A., Hershey, K. L., & Fisher, P. (2001). Investigations of child temperament at three to seven years: The Children's Behavior Questionnaire. *Child Development, 72*, 1394-1408.
- Rothbart, M. K., & Derryberry, D. (1981). Development of individual differences in temperament. In M. E. Lamb & A. L. Brown (Eds.), *Advances in developmental psychology, Vol. 1* (pp. 37-81). Hillsdale, NJ: Erlbaum.
- Rothbart, M. K., Derryberry, D., & Hershey, K. (2000). Stability of temperament in childhood: Laboratory infant assessment to parent report at seven years. In V. J. Molfese & R. R. McCrae (Eds.), *Temperament and personality development across the life span* (pp. 85-114). Mahwah, NJ: Erlbaum Associates.
- Rothbart, M. K., Posner, M. I., & Kieras, J. (2006). Temperament, attention, and the development of self-regulation. In K. McCartney & D. Phillips (Eds.), *The Blackwell handbook of early child development* (pp. 338-357). Malden, MA: Blackwell Publishing.

Rothbart, M. K., Sheese, B. E., & Posner, M. I. (2007). Executive Attention and Effortful Control: Linking Temperament, Brain Networks, and Genes. *Child Development Perspectives, 1*, 2-7. doi:10.1111/j.1750-8606.2007.00002.x

Rudasill, K. M., Gallagher, K. C., & White, J. M. (2010). Temperamental attention and activity, classroom emotional support, and academic achievement in third grade. *Journal Of School Psychology, 48*, 113-134. doi:10.1016/j.jsp.2009.11.002

Rudasill, K. M., Hawley, L., Molfese, V. J., Tu, X., Prokasky, A., & Sirota, K. (2016). Temperament and Teacher–Child Conflict in Preschool: The Moderating Roles of Classroom Instructional and Emotional Support. *Early Education & Development, 27*, 859-874. doi:10.1080/10409289.2016.1156988

Rural Families Data Center (2004). *Strengthening rural families: America's rural children*. Washington, DC: RCDF.

Salvia, J., Ysseldyke, J., & Bolt, S. (2009). *Assessment in special and inclusive education*. Belmont, CA: Wadsworth.

Schoen, M. J., & Nagle, R. J. (1994). Prediction of school readiness from kindergarten temperament scores. *Journal of School Psychology, 32*, 135–147. doi:10.1016/0022-4405(94)90007-8

Shin, T. (2012). The application of various nonlinear models to describe academic growth trajectories: An empirical analysis using four-wave longitudinal achievement data from a large urban school district. *Asia Pacific Education Review, 13*, 65-76. doi:10.1007/s12564-011-9168-7

Shiner, R. L., Buss, K. A., McClowry, S. G., Putnam, S. P., Saudino, K. J., & Zentner, M. (2012). What is temperament now? Assessing progress in temperament research on

- the twenty-fifth anniversary of Goldsmith et al. (1987). *Child Development Perspectives*, 6, 436-444.
- Stipek, D., & Ryan, R. (1997). Economically disadvantaged preschoolers: Ready to learn by further to go. *Developmental Psychology*, 33, 711-723.
- Thomas, A., Chess, S., & Birch, H. G. (1968). *Temperament and behavior disorders in children*. New York, NY: NYU Press.
- Tobias, S. (2010). Generative learning theory, paradigm shifts, and constructivism in educational psychology. *Educational Psychologist*, 42, 1-7.
- U.S. Census Bureau. (2012). Statistical Abstract of the United States: 2012. (NHES Publication No. 2012-0235). Retrieved from <http://www.census.gov/compendia/statab/2012/tables/12s0235.pdf>
- U.S. Department of Education, National Center for Education Statistics. (2015). *The Condition of Education 2015* (NCES 2015-144). Retrieved from http://nces.ed.gov/programs/coe/indicator_cfa.asp
- VanSchyndel, S. K., Eisenberg, N., Valiente, C., & Spinrad, T. L. (2015). Relations from temperamental approach reactivity and effortful control to academic achievement and peer relations in early elementary school. *Journal of Research in Personality*. doi:10.1016/j.jrp.2015.12.001
- Viljaranta, J., Aunola, K., Mulla, S., Virkkala, J., Hirvonen, R., Pakarinen, E., & Nurmi, J. (2015). Children's temperament and academic skill development during first grade: Teachers' interaction styles as mediators. *Child Development*, 86, 1191-1209. doi:10.1111/cdev.12379

Vitiello, V. E., Moas, O., Henderson, H. A., Greenfield, D. B., & Munis, P. M. (2012).

Goodness of fit between children and classrooms: Effects of child temperament and preschool classroom quality on achievement trajectories. *Early Education and Development, 23*, 302-322. doi:10.1080/10409289.2011.526415

Zhou, Q., Main, A., & Wang, Y. (2010). The relations of temperamental effortful control and anger/frustration to Chinese children's academic achievement and social adjustment:

A longitudinal study. *Journal of Educational Psychology, 102*, 180–196.

doi:10.1037/a0015908

Zimmerman, B. J., & Kitsantas, A. (2014). Comparing students' self-discipline and self-regulation measures and their prediction of academic achievement. *Contemporary Educational Psychology, 39*, 145-155. doi:10.1016/j.cedpsych.2014.03.004

APPENDIX A

CBQ-VSF

Subject No. _____

Date of Child's Birth:

Today's Date _____

Month Day Year

Sex of Child _____

Age of Child _____
Years monthsInstructions: Please read carefully before starting:

On the next pages you will see a set of statements that describe children's reactions to a number of situations. We would like you to tell us what your child's reaction is likely to be in those situations. There are of course no "correct" ways of reacting; children differ widely in their reactions, and it is these differences we are trying to learn about. Please read each statement and decide whether it is a "true" or "untrue" description of your child's reaction within the past six months. Use the following scale to indicate how well a statement describes your child:

- | Circle # | If the statement is: |
|----------|--------------------------------------|
| 1 | extremely untrue of your child |
| 2 | quite untrue of your child |
| 3 | slightly untrue of your child |
| 4 | neither true nor false of your child |
| 5 | slightly true of your child |
| 6 | quite true of your child |
| 7 | extremely true of your child |

If you cannot answer one of the items because you have never seen the child in that situation, for example, if the statement is about the child's reaction to your singing and you have never sung to your child, then circle NA (not applicable).

Please be sure to circle a number or NA for every item.

1. Seems always in a big hurry to get from one place to another.
1 2 3 4 5 6 7 NA
2. Gets quite frustrated when prevented from doing something s/he wants to do.
1 2 3 4 5 6 7 NA
3. When drawing or coloring in a book, shows strong concentration.
1 2 3 4 5 6 7 NA
4. Likes going down high slides or other adventurous activities.
1 2 3 4 5 6 7 NA
5. Is quite upset by a little cut or bruise.
1 2 3 4 5 6 7 NA
6. Prepares for trips and outings by planning things s/he will need.
1 2 3 4 5 6 7 NA
7. Often rushes into new situations.
1 2 3 4 5 6 7 NA
8. Tends to become sad if the family's plans don't work out.
1 2 3 4 5 6 7 NA
9. Likes being sung to.
1 2 3 4 5 6 7 NA
10. Seems to be at ease with almost any person.
1 2 3 4 5 6 7 NA
11. Is afraid of burglars or the "boogie man."
1 2 3 4 5 6 7 NA
12. Notices it when parents are wearing new clothing.
1 2 3 4 5 6 7 NA
13. Prefers quiet activities to active games.
1 2 3 4 5 6 7 NA
14. When angry about something, s/he tends to stay upset for ten minutes or longer.
1 2 3 4 5 6 7 NA
15. When building or putting something together, becomes very involved in what s/he is doing, and works for long periods.
1 2 3 4 5 6 7 NA

16. Likes to go high and fast when pushed on a swing.
1 2 3 4 5 6 7 NA
17. Seems to feel depressed when unable to accomplish some task.
1 2 3 4 5 6 7 NA
18. Is good at following instructions.
1 2 3 4 5 6 7 NA
19. Takes a long time in approaching new situations.
1 2 3 4 5 6 7 NA
20. Hardly ever complains when ill with a cold.
1 2 3 4 5 6 7 NA
21. Likes the sound of words, such as nursery rhymes.
1 2 3 4 5 6 7 NA
22. Is sometimes shy even around people s/he has known a long time.
1 2 3 4 5 6 7 NA
23. Is very difficult to soothe when s/he has become upset.
1 2 3 4 5 6 7 NA
24. Is quickly aware of some new item in the living room.
1 2 3 4 5 6 7 NA
25. Is full of energy, even in the evening.
1 2 3 4 5 6 7 NA
26. Is not afraid of the dark.
1 2 3 4 5 6 7 NA
27. Sometimes becomes absorbed in a picture book and looks at it for a long time.
1 2 3 4 5 6 7 NA
28. Likes rough and rowdy games.
1 2 3 4 5 6 7 NA
29. Is not very upset at minor cuts or bruises.
1 2 3 4 5 6 7 NA
30. Approaches places s/he has been told are dangerous slowly and cautiously.
1 2 3 4 5 6 7 NA

31. Is slow and unhurried in deciding what to do next.
1 2 3 4 5 6 7 NA
32. Gets angry when s/he can't find something s/he wants to play with.
1 2 3 4 5 6 7 NA
33. Enjoys gentle rhythmic activities such as rocking or swaying.
1 2 3 4 5 6 7 NA
34. Sometimes turns away shyly from new acquaintances.
1 2 3 4 5 6 7 NA
35. Becomes upset when loved relatives or friends are getting ready to leave following a visit.
1 2 3 4 5 6 7 NA
36. Comments when a parent has changed his/her appearance.
1 2 3 4 5 6 7 NA

Please check back to make sure you have completed all items by marking a number or "NA".

Thank you very much for your help!

APPENDIX B

Letter of Agreement

June 10, 2015

To the Appalachian Institutional Review Board (IRB):

I am familiar with Drs. Sandra Glover Gagnon, Timothy J. Huelsman, and Pamela KidderAshley's research project entitled INSIGHTS Into Appalachia. I understand Avery County Schools' involvement to be the following:

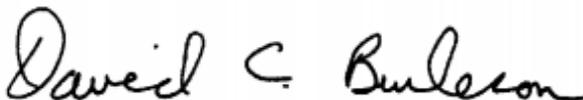
- allowing the researchers to recruit parents of PreKindergarten and Kindergarten children to complete questionnaires about their children, to provide consent for their children to be rated by their teachers, and to allow the researchers to collect school records (demographics, test scores);
- allowing PreK and K teachers to attend training in INSIGHTS and complete rating scales about themselves and their students at designated times during the school year;
- providing archival data about participating students (demographics, test scores); and
- allowing the researchers to observe PreK and K classrooms and administer tests to students.

As the research team conducts this research project I understand and agree that:

- This research will be carried out following sound ethical principles and that it has been approved by the IRB at Appalachian State University.
- Employee participation in this project is strictly voluntary and not a condition of employment at Avery County Schools. There are no contingencies for employees who choose to participate or decline to participate in this project. There will be no adverse employment consequences as a result of an employee's participation in this study.
- To the extent confidentiality may be protected under State or Federal law, the data collected will remain confidential, as described in the protocol. The name of our agency or institution will not be reported in the results of the study.

Therefore, as a representative of Avery County Schools, I agree that Drs. Sandra Glover Gagnon, Timothy J. Huelsman, and Pamela Kidder-Ashley's research project may be conducted at our agency/institution, and that they may assure participants that they may participate by attending INSIGHTS training, completing questionnaires, and allowing classroom observations, without adverse employment consequences.

Sincerely,



David Burleson, Superintendent

APPENDIX C

Letter of Consent

You are invited to participate in a research study about a program designed to prevent behavior problems in children. INSIGHTS into Children's Temperament helps teachers understand and appreciate children's unique characteristics and use that knowledge to effectively manage their behaviors. Your child's teacher will attend INSIGHTS trainings during the school year, where they will learn about children's temperaments, or their ways of reacting to things in their environments, and about strategies to promote their success in the classroom.

If you agree to be part of the research study, you will be asked to do the following things:

- Complete a questionnaire about your child's behaviors.
- Give us permission to collect information about your child from school records, including your child's age and race;
- Give us permission to give your child a test called the Developmental Indicators for the Assessment of Learning-Fourth Edition (DIAL-4). This test will tell us about your child's thinking skills (knowledge of colors, counting) and language skills (knowledge of letters and words, ability to solve problems). Our researchers will give the DIAL-4 to your child 4 times during the school year.
- Give us permission for your child's teacher complete questionnaires about your child's behaviors, 4 times during the school year.

Benefits of the research may include improved outcomes for your child and his or her teacher. INSIGHTS has helped teachers better manage children's classroom behaviors. Children whose teachers have participated in INSIGHTS training have shown increased math and reading achievement, sustained attention, critical thinking, and classroom engagement, as well as reduced behavior problems, off-task behaviors, and disruptive behaviors. By participating in this research study, your child and his or her teacher also may experience these benefits.

Participating in this study is completely voluntary. Even if you decide to participate now, you may change your mind and stop at any time. You may choose not to complete the questionnaire, allow your child's teacher to complete questionnaires, or allow us to give your child the DIAL-4, for any reason.

If you have questions about this research study, you may contact Dr. Sandra Glover Gagnon, at 828-262-2272, ext. 420 OR gagnonsg@appstate.edu

The Appalachian State University Institutional Review Board (IRB) has determined that this study is exempt from IRB oversight.

I agree to participate in the study.

Signature

Date

If you agree, please sign one copy of this consent form and return it, and the completed questionnaire, to your child's teacher in the sealed envelope we have provided. Please keep the other copy of this form for your own records.

APPENDIX D

IRB Correspondence

TO: Sandra Gagnon
Psychology
CAMPUS MAIL

FROM: IRB Administration in the Office of Research Protections
DATE: 7/01/2015
RE: Notice of Receipt of Initial Submission on 7/01/2015
STUDY #: 16-0001 ,
STUDY TITLE: INSIGHTS Into Appalachia: Temperament-Based Intervention in Rural Schools

Your request has been assigned Study # 16-0001. It is helpful if you use this number when corresponding with our office about this study.

All IRB correspondence will be sent through email*. In some cases, you may receive a letter asking you to address items required for the approval or exemption of your study.

Please be aware that all investigators listed on the application must complete the CITI online human research ethics training course before the IRB will approve a study or determine a study to be exempt. Instructions for the CITI course may be found at <http://www.orsp.appstate.edu/protections/irb/training>. There is no need to send a certificate of completion to us because we can check completion records. If all investigators have completed the CITI training, please disregard this notice.

*Our system defaults to your appstate.edu account for all correspondence.

If you have any questions about your request for review, please contact Robin Tyndall at 262-2692 or at irb@appstate.edu. Thank you.

Vita

Hannah Suzanne Van Doren was born and raised in Hendersonville, North Carolina. After graduating from West Henderson High School in 2009, she enrolled at Appalachian State University and was awarded a Bachelor of Science in Elementary Education in December of 2013. After teaching fourth grade for five months, Hannah accepted a Research Assistant position and began study toward Master of Arts and Specialist in School Psychology degrees at Appalachian State University. In August of 2016, she began working as a school psychology intern with the Wake County Public School System, and she was awarded an M.A. and an S.S.P. in May of 2017.