

As part of the Virginia Kindergarten Readiness Program's (VKRP) multi-dimensional assessment of children's school readiness skills, *self-regulation* and *social skills* are assessed using the Child Behavior Rating Scale (CBRS). The CBRS is a teacher-report comprised of 17 items – 10 items assessing self-regulation and 7 items assessing social skills. After objectively observing children's behaviors in the classroom, teachers complete the rating scale for each child through the online VKRP portal, taking approximately 3 minutes to complete per child.

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Overview of the Measure and Its Constructs

The Child Behavior Rating Scale (Bronson et al., 1990) is a teacher-report measure used to “evaluate a child’s task behavior and social behavior with peers and adults” (Bronson et al., 1995, p. 260). The original measure is comprised of 32 items that ask teachers to rate the frequency with which individual children exhibit specific behaviors on a scale from 1 (*never*) to 5 (*always*). Eighteen items combine to form the *Mastery Behavior Scale* and 14 comprise the *Social Behavior Scale*, which together capture children’s work-related skills and social skills, respectively (Lim et al., 2010; Son et al., 2013).

The majority of studies using the CBRS, however, have utilized shorter variations of the measure. One of the most commonly used variations was introduced by Matthews and colleagues (2009) and consists of 17-items that measure children’s behavioral regulation as illustrated by two subscales. *The *Classroom Self-Regulation* subscale is comprised of 10 items that assess children’s behavioral regulation during academic tasks (e.g., following directions, staying on task; See Appendix A for items); the *Social Skills (or Interpersonal Skills)* subscale is comprised of 7 items that assess children’s behavioral regulation in social situations (e.g., respecting others, sharing; See Appendix A for items). This factor structure has been validated in other studies (e.g., Ponitz et al., 2009; Wanless et al., 2011b), and many who use the CBRS opt to utilize the items from the *Classroom Self-Regulation* subscale independently or in conjunction with those from the *Social Skills (Interpersonal Skills)* subscale to assess children’s behavioral regulation.

The Virginia Kindergarten Readiness Program falls within this latter category and uses the 17 items from both subscales as a way to assess children’s approaches to learning, self-regulation, and social-emotional development. Scores are interpreted at the domain level, with the 10 items from the *Classroom Self-Regulation* subscale comprising the “self-regulation domain” and the 7 items from the *Social Skills (Interpersonal Skills)* subscale comprising the “social skills domain.”

Previous Uses of the CBRS

Function of the CBRS. The CBRS has been used as a measurement tool in studies that have explored a wide range of topics, including those focusing on children’s academic or social-emotional development (e.g., Lee et al., 1998; McClelland et al., 2007), the assessment of early childhood programs or interventions (e.g., Bronson et al., 1995; Schmitt et al., 2015), and the testing of other measures’ psychometric properties (e.g., Meisels et al., 1995; Ponitz et al., 2008). In these studies, items from the CBRS have been utilized both as a way to measure specific constructs (e.g., task behavior, work-related social skills, interpersonal skills, goal-oriented behaviors) and also as a way to more broadly measure overall classroom behavior.

*The remaining 16 items on the CBRS comprise additional subscales (i.e., social play, engagement, and social problem solving) that are not significantly related to children’s behavior regulation (Matthews et al., 2009).

Sample characteristics. The CBRS has been used to assess the behavior of children spanning a wide range of ages and across a variety of contexts. Of the studies reviewed, children ranged between the ages of three and ten years, with the majority of studies focusing on those in preschool or kindergarten (see Table 1 for summary). CBRS data has been collected across a variety of different settings, including day care centers, preschools, Head Start programs, kindergarten classrooms, and elementary schools. Use of the CBRS has not been confined to the United States but has also been validated and utilized across a number of countries in Europe (i.e., Albania, England, Iceland, Germany, Norway, and Romania) and Asia (i.e., China, Singapore, South Korea, and Taiwan; see Table 1 for summary).

Association with developmental outcomes. Studies have repeatedly identified the significant association between children's scores on the CBRS and their development of a wide-range of outcomes. For example, CBRS scores have been associated with children's overall cognitive achievement (e.g., Lee et al., 1998), math (e.g., Wanless et al., 2011a), vocabulary (e.g., Gestsdottir et al., 2014), and literacy outcomes (e.g., Ponitz et al., 2008). Studies have also identified the relationship between children's CBRS scores and other important domains of school readiness, including attentional and inhibitory control (Kim et al., 2016; Yang & Lamb, 2014).

Psychometric Properties of the CBRS

Reliability. The CBRS has persistently demonstrated good internal consistency. Initial analysis of the original 32-item CBRS yielded a test-retest reliability of .67 and an internal consistency (Cronbach's alpha) of .96 (Layzer et al., 1990). Additional studies using all CBRS items have produced similar results with alpha's ranging between .82 – .96 (e.g., Bronson et al., 1995; Son et al., 2013). Specifically regarding the 17-item, two-factor structure proposed by Matthews et al. (2009) and utilized by VKRP, studies have produced Cronbach's alphas ranging between .89 – .95 (e.g., Moldovan & Bocos-Bintintan, 2016; Tindal et al., 2015). In further support of this two-factor structure, factor analyses show that the majority of the CBRS's variance can be captured through the *Classroom Self-Regulation* and *Social Skills (Interpersonal Skills)* factors (42% and 10%, respectively; Matthews et al., 2009). This two-factor structure has been replicated in multiple studies with high item loadings (.60 – .80) on factors both in the United States and abroad (e.g. Ponitz et al., 2009; Von Suchodoletz et al., 2013; Wanless et al., 2013). Internal consistency for the 10-item *Classroom Self-Regulation* subscale has consistently produced Cronbach's alphas greater than .92 (e.g., Kim et al., 2016; Sung, 2014; Schmitt, 2014), while the *Social Skills (Interpersonal Skills)* subscale has shown less, but still relatively good, internal consistency (Cronbach's alpha = .76 – .85; Von Suchodoletz et al., 2015; Ponitz et al., 2009).

Validity. The CBRS has strong construct and concurrent validity. The full 32-item measure is moderately correlated with the Bronson Social and Task Skill Profile (Bronson, 1996), an observational measure used to assess children's classroom goal-oriented and regulatory behaviors (Ponitz et al., 2009). The CBRS has also shown to have high correlations with the Observed Child Engagement Scale (Rimm-Kauffman, 2005), another child observation tool (Schmitt et al., 2014). Regarding direct assessment measures of children's self-regulatory skills, the CBRS has consistently produced significant correlations with the Head-Toes-Knees-Shoulders task (e.g., Ponitz et al., 2008; Wanless et al., 2011ab) and the Head-to-Toes task (e.g., Birgisdottir et al., 2015; McClelland et al., 2007). It has also shown a significant relationship with children's scores on the Preschool Inventory (PSI), a direct assessment of children's cognitive achievement (Bronson et al., 1995; Lee et al., 1998). The CBRS has been found to predict children's pre-academic school readiness skills, including math achievement (Gestsdottir et al., 2014; Schmitt et al., 2014) and literacy outcomes such as reading comprehension, vocabulary, and letter knowledge (Birigottir et al., 2015; Gestsdottir et al., 2014; Schmitt et al., 2014).

Use of the CBRS in VKRP

Of the approximately 11,300 children assessed using the CBRS during the 2016-2017 school year, data demonstrated strong internal consistency. Overall, the 17-item measure yielded a Cronbach's alpha of .96, and scores were similar across *Self-Regulation* and *Social Skills (Interpersonal Skills)* subscales (Cronbach's alpha of .97 and .92, respectively). Subscale scores were moderately correlated with one another (Pearson Correlation = .660, $p < .001$)

Appendix A.

Factor Structure of *CBRS* Items (Matthews et al., 2009)

Classroom Self-Regulation

- Item 15: Observes rules and follows directions without reminders
- Item 20: Completes learning tasks in an organized way
- Item 21: Completes tasks successfully
- Item 22: Attempts new and challenging tasks
- Item 23: Concentrates when working, not easily distracted
- Item 24: Responds to instructions and begins appropriate task
- Item 25: Takes time to do his/her best work
- Item 27: Finds and organizes materials
- Item 28: Sees own errors on task and corrects them
- Item 29: Returns to unfinished tasks after interruption

Social Skills (Interpersonal Skills)

- Item 3: Willing to share
- Item 5: Expresses hostility—Verbally
- Item 6: Expresses hostility—Physically
- Item 7: Cooperates with playmates
- Item 8: Takes turns without being told to do so
- Item 13: Complies with adult directives—With little or no resistance
- Item 16: Does not fuss when doesn't get teacher's attention

Remaining Items

- Item 1: Joins in play with others
- Item 2: Comforts peers
- Item 4: Plays with other children
- Item 9: Offers suggestions for play
- Item 10: Suggestions for play are accepted by other children
- Item 11: Engages in pretend play
- Item 12: Resolves potential social conflicts
- Item 14: Initiates social interaction with adults
- Item 17: Can deal with normal criticism or teasing
- Item 18: Tries to solve a problem before asking for help
- Item 19: Shows satisfaction when completes a project
- Item 26: Feels s/he can cope well with classroom situations
- Item 30: Interested in trying new activities, games, etc.
- Item 31: Conveys confidence about being able to succeed
- Item 32: Shows enthusiasm for activities

Table 1.
Studies Using the *CBRS* (N=28)

Study	Study Location	Sample	Items/Scales Used
Bronson, Tivnan, & Seppanen (1995)	United States	Preschoolers (N=586)*	All items
Kim et al. (2016)		Age: 5 – 8 (N=278) Kindergarten, First Grade	Self-Regulation subscale
Lee, Loeb, & Lubeck (1998)		Age: 4 (N=677)* Preschool	All items
Matthews, Ponitz, & Morrison (2009)		Age: 5 – 6 (N=268) Kindergarten	Self-Regulation subscale
McClelland & Morrison (2003)		Age: 3 – 5 (N=72) Preschool	Mastery Behaviors subscale
McClelland et al. (2007)		Age: 3 – 5 (N=310) Preschool	Self-Regulation subscale
Meisels et al. (1995)		Age: 4 – 6 (N=86) Kindergarten	All items
Ponitz et al. (2009)		Age: 4 – 6 (N=343) Kindergarten	Self-Regulation subscale Social (Interpersonal) Skills subscale
Ponitz et al. (2008)		Age: 3 – 6 (N=445) Preschool	Self-Regulation subscale
Schmitt, Pratt, & McClelland (2014)		Age: 3 – 5 (N=247) Preschool	Self-Regulation subscale
Schmitt et al. (2015)		Age: 3 – 5 (N=276)* Preschoolers (Head Start)	Self-Regulation subscale
Tindal, Irvin, & Nese (2015)		Kindergartners (N=1189)	Self-Regulation subscale Social (Interpersonal) Skills subscale
von Suchodoletz, Uka, & Larsen (2015)		Albania	Age: 4 – 5 (N=150)
Yang & Lamb (2014)	England	Age: 4 (N=67)	All items
Ludwig et al. (2016)	Germany	Age: 4 – 6 (N=106)	Select items pulled
Gestsdottir et al. (2014)	Germany, Iceland	Age: 5 – 6 (N=181) Preschool	Self-Regulation subscale

von Suchodoletz et al. (2013)		Age: 5 - 6 (N=301)	Self-Regulation subscale
Birgisdóttir, Gestsdóttir, & Thorsdóttir (2015)	Iceland	Age: 4 - 5 (N=111) Preschool	Self-Regulation subscale
Resaland et al. (2015)	Norway	Age: 10 (N=1145)	Self-Regulation subscale
Moldovan, & Bocos-Bintintan (2016)	Romania	Age: 7 - 10 (N=41)	Self-Regulation subscale Social (Interpersonal) Skills subscale
Lim, Rodger, & Brown (2010a)	Singapore	Age: 3 - 6 (N=117)**	All items
Lim, Rodger, & Brown (2010b)		Age: 3 - 6 (N=117)**	All items
Ahn & Kwon (2005)	South Korea	Age: 5 - 6 (N=167)	Mastery Behaviors subscale
Son, Lee, & Sung (2013)		Age: 3 - 6 (N=229)	All items
Sung (2014)		Age: 4 - 5 (N=214)	Self-Regulation subscale
Wanless et al. (2011a)	Taiwan	Age: 3 - 4 (N=152) Preschool	Self-Regulation subscales
Wanless et al. (2011b)	China, Taiwan, South Korea, United States	Age: 3 - 6 (N=814) Preschool	Self-Regulation subscale
Wanless et al. (2013)		Age: 3 - 6 (N=814) Preschool	Self-Regulation subscale

*indicates sample of low socio-economic status

**indicates portion of sample with special needs

Number of studies using:

- 3-year-olds: ~12
- 4-year-olds: ~20
- 5-year-olds: ~22
- 6-year-olds: ~15
- 7-year-olds: 1
- 8-year-olds: 1
- 9-year-olds: 1
- 10-year-olds: 2

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