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To the Graduate Council:

I am submitting herewith a dissertation written by Rebecca Grace Gray entitled "Reliability and Validity of the UNIT - Gifted Screening Scale (UNIT - GSS)." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Education.

R. Steve McCallum, Major Professor

We have read this dissertation and recommend its acceptance:

Tricia McClam, Sherry Bain, John W. Lounsbury

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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Accepted for the Council:

School Carolyn R. Hodges
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2007b
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Reliability and Validity of the UNIT – Gifted Screening Scale (UNIT – GSS)

A Dissertation Presented for the
Doctor of Philosophy Degree
The University of Tennessee, Knoxville

Rebecca Grace Gray
August 2007

Abstract

The psychometric integrity of the UNIT – Gifted Screening Scale (UNIT – GSS; McCallum & Bracken, in press) was explored by examining Cronbach's Alphas for each of its scales (reliabilities ranged from .95 to .98). In addition, the concurrent validity was evaluated by comparing scores from non-academically oriented UNIT-GSS scales to other instruments that measure the same constructs for 106 2nd through 8th grade students, rated either by their teachers or themselves, on the UNIT – GSS, the Gifted Rated Scales (GRS; Pfeiffer & Jarosewich, 2003), and a self-report instrument designed to measure emotional intelligence, the Bar-On Emotional Quotient: Youth Version Short Form (Bar-On EQ-i: YV [S]; Bar-On & Parker, 2000). To assess concurrent validity of the UNIT-GSS academic scales, scores on an end-of-year achievement test, the Terra Nova Comprehensive Test of Basic Skills (CTBS; CTB, 1996) were compared (to the academically oriented UNIT – GSS scales). Coefficients for "like" constructs ranged from .46 to .85 ($p < .001$). Finally, providing evidence of construct validity, all UNIT – GSS scale means for 53 students who participated in a Gifted and Talented program were significantly higher ($p < .001$) than their matched non-gifted peers.

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CHAPTER I

INTRODUCTION

There are currently a number of gifted rating scales available that were developed to identify students for gifted and talented educational programs. However, not one urges raters to refrain from penalizing examiners because of limited English language use, assesses the construct of emotional intelligence in a focused manner, nor requires raters to incorporate local standards in the scoring process. The UNIT Gifted Screening Scale (UNIT – GSS; McCallum & Bracken, in press) includes all of these important characteristics. It was developed for use by teachers as an efficient screening measure of giftedness in grades K through 12. The instrument consists of eight scales that comprise two clusters. The UNIT – GSS General Aptitude cluster consists of four scales: Cognitive Aptitude, Creative Aptitude, Emotional Aptitude, and Leadership Aptitude. The Specific Academic Aptitude Cluster consists of four scales: Language Arts Aptitude, Math Aptitude, Reading Aptitude, and Science Aptitude. The scale is designed to be one part of a comprehensive evaluation of a student's abilities. The purpose of this study is to examine the psychometric integrity of the scale by evaluating the reliability, concurrent, and construct validity of the UNIT - GSS.

Identifying Gifted Students

The identification of students for gifted and talented programs is a much-discussed topic in the field of education. However, the field of gifted education lacks one universally accepted definition of giftedness. Researchers have described gifted children as highly motivated, extremely independent, academically precocious, verbally proficient, and creative. (Glass, 2004). Sattler (2002) states that children are generally referred to as gifted and talented if they have outstanding ability in an area, such as an extremely high

intelligence quotient (IQ), excellence in art or music, or high scores on tests of creativity. The United States Department of Education defines giftedness as extraordinary ability in intellectual and specific academic or artistic fields, or high performance capabilities in creativity or leadership (U.S. Department of Education, 1993). The foundation of any gifted education program is built upon how it chooses to define giftedness. The specific abilities and characteristics included in the definition determine the kinds of identification criteria that are used to select children for a program and the kinds of educational services that are provided to those children. Therefore, the selection of abilities to be included in a definition is very important to educators who must determine which children are designated as gifted and what kinds of educational services are provided to them (Codd, n.d.). Many state and local school systems have incorporated a version of the federal definition into their own state guidelines for identifying and providing services for gifted students (Stephens & Karnes, 2000). For example, the Tennessee State Department of Education defines an intellectually gifted child as one whose intellectual abilities and potential for achievement are so outstanding that special provisions are required to meet the child's educational needs (TN State Department of Education, 2003). The "need for special provisions" component is found in many states' criteria for the identification of gifted students. Assuming students' needs are not being met in a general education classroom, then students become eligible for special education.

Traditionally, giftedness has been associated with advanced academic skills and characteristics measured by traditional intelligence tests (Callahan, 2005). Children who achieved IQ scores above a certain cut-off score have been designated as gifted. However, the use of IQ scores as the sole indicator of giftedness has serious limitations (Baldwin, 2005). Using the IQ only criterion, nonintellectual domains of giftedness, such as

creativity, artistic ability, and leadership skills, are often not assessed, or are assessed only very superficially. Therefore, students who are talented in the arts or leadership are often overlooked (Jarosewich, Pfeiffer, & Morris, 2002). Traditional methods using primarily IQ scores also typically result in under representation of students from culturally diverse backgrounds in gifted education programs (Callahan, 2005). Critics of gifted education programs often complain that students in special academic programs are predominantly White and middle class (Glass, 2004). One study found that Black and Hispanic students are less than half as likely to be in gifted programs as White students (Donovan & Cross, 2002). Researchers have suggested that assessment procedures relying on broader definitions of *talent* and *intelligence,* along with the use of alternative less verbally laden assessment strategies, will produce more accurate identification of gifted students and will increase representation of children from ethnically diverse populations in programs for the gifted (Plucker, Callahan, & Tomchin, 1996).

Expanding the Definition of Giftedness

Some have attempted to expand the way in which practitioners conceptualize the notion of intelligence. Howard Gardner's (1983) theory of multiple intelligences provides constructs of intelligence that extend areas of giftedness to include not only verbal-linguistic talent, but also spatial, logical-mathematical, musical, kinesthetic, interpersonal, intrapersonal, and naturalist talents (Brown, Renzulli, Gubbins, Siegle, Zhang, & Chen, 2005; Callahan, 2005). Similarly, Robert Sternberg advocated the use of a triarchic theory of intelligence and argued against using the IQ score as the sole determinant of giftedness. His triarchic model includes analytical, synthetic/creative, and practical intelligence (Sternberg, 1985). These types of intelligence provide a basis for consideration of the

different ways in which students are best able to know, understand, and express themselves within the school curriculum (Callahan, 2005).

Others have noted the importance of developing more inclusive definitions of intelligence and/or giftedness. For example, Joseph Renzulli (2004) describes two types of intelligence. One he refers to as "schoolhouse giftedness" and the other as "creative/productive giftedness." Schoolhouse giftedness, in his view, refers to test-taking or lesson-learning giftedness. This type is most easily measured by IQ tests and has been the type most often used for selecting students for participation in special programs (Renzulli, 2004). Creative/productive giftedness, on the other hand, describes the importance of generating original and useful products. Learning situations that promote this type of intelligence emphasize application and the thinking process in an integrated and problem-oriented manner. According to Renzulli (2004), both types are equally important, as is the interaction between the two, and special programs should make provisions to encourage both.

Personnel within the U.S. Department of Education have taken the recommendations to develop inclusive assessments seriously and recommend that the identification of gifted students include assessing diverse talents, using a variety of measures, with bias-free assessment (U.S. Department of Education, 1993). Identification should consist of comprehensive, psychometrically sound, and multifactored operationalizations using information from a variety of sources. Consequently, assessment should not be limited to areas of intellectual and academic ability, but should reflect performance in areas of creativity, artistic ability, and leadership (Jarosewich, et al., 2002). Importantly, giftedness is not a trait that requires a child to exhibit outstanding abilities in all

areas. Children may be gifted or talented in one area, such as mathematics, but not in reading or writing, for example (Callahan, 2005).

The most effective means of identifying students combines results from several procedures (Sattler, 2002). Information useful in initial screenings should come from multiple perspectives and informants. The process should include data from parents and teachers, review of school files, student work samples, and self-reports (Jarosewich, 2002). Information about a student's developmental history and input from teachers and parents can assist in identifying areas of need. These data can be combined with more traditional assessments of intelligence, achievement, classroom observations, and portfolio reviews (Jarosewich, 2002). In order to deemphasize the importance of IQ and achievement tests in favor of more inclusive identification procedures, many states (e.g., Tennessee, Texas, and Georgia) have adopted guidelines calling on local school systems to use multiple criteria in identifying student. Similarly, the National Association for Gifted Children advocates using measurements of diverse abilities, talents, strengths, and needs (Landrum, Callahan, & Shaklee, 2001).

Using Ratings to Identify Giftedness

Many experts suggest the use of identification processes that combine standardized and nonstandardized assessments and require evaluations of achievement and IQ as well as other strategies designed to uncover hidden potential (Baldwin, 2005). Gifted rating scales provide a method for gathering information efficiently and reliably, and allow teachers to summarize their perceptions of students based on classroom observations and samples of academic tasks (Jarosewich, et al, 2002). Unlike some traditional, standardized identification measures, rating scales assess a variety of skills and talents, such as creativity, artistic ability, leadership, and motivation. Rating scales can compliment and increase the

validity of the identification process, particularly as part of inclusive portfolio assessment (Jarosewich, et al, 2002).

Because teachers observe students in a variety of situations, their perspective is valuable. In fact, according to Gagne (1994) teachers are effective in identifying gifted and talented students, and their ratings are often included as part of a comprehensive identification process (Siegle & Powell, 2004).

Currently, there are several rating scales available to assist in the identification of gifted students. Most of these scales require third-party informants, such as teachers or parents, and are designed to identify students for gifted programs by assessing various aspects of giftedness. Jarosewich et al. (2002) examined a collection of over 30 scales cited in the literature and narrowed the scales down to three dominant and widely used teacher-completed instruments. The Gifted Rating Scales (GRS: Pfeiffer & Jarosewich, 2003) is one such scale.

Gifted Rating Scales

The GRS is available in two age-differentiated forms; the GRS Preschool Form (GRS-P) for ages 4 through 6 years, and the GRS School Form (GRS-S) for ages 6 trough 13 years. The GRS-P contains 60 items that contribute to five scales: Intellectual Ability, Academic Ability, Creativity, Artistic Talent, and Motivation. The GRS-S contains 72 items that contribute to six scales. In addition to those mentioned above, it also includes a Leadership Ability scale.

Normative samples for both forms of the GRS were obtained from a nationally representative sample, although a slightly disproportionately large number of children from the Northeast region of the U.S were included. The GRS-P normative sample included ratings from 90 teachers who rated 375 children ranging in age from 4 years 0 months to 6

years 11 months. The GRS-S normative sample included ratings from 382 teachers who rated 600 children ranging in age from 6 years 0 months to 13 years 11 months. The GRS scales exhibited adequate floors and ceilings. Maximum raw scores were associated with T-scores between two and three standard deviations above the normative mean and although not designed to measure deficits, all scores demonstrated adequate floors. The GRS scales also exhibited adequate score gradients, with about 18 raw score points associated with one standard deviation change in T scores across the range (Margulies & Floyd, 2004).

Internal consistency coefficients and test-retest reliability coefficients from both forms of the GRS appear to be well above .80. Internal consistency coefficients ranged from .97 to .99 for the five scales of the GRS-P and from .97 to .99 for the six scales of the GRS-S. Test-retest reliability coefficients for the GRS-P were .85 or greater and for the GRS-S were .88 or greater. Thus, scale scores for both forms appear to be internally consistent and stable indicators of the characteristics of giftedness (Margulies & Floyd, 2004).

The GRS authors provide evidence of relationships between the GRS and external criteria. Scores from the GRS scales were correlated with scores from several intelligence and achievement test batteries (e.g., WPPSI-III, WISC-IV, and WIAT-II). All correlations were positive. Correlations ranged from .40 to .57 for the GRS-P and from .29 to .54 for the GRS-S. The GRS also yielded positive correlations with other similar measures of creativity, leadership, etc., for example, the Scales for Rating the Behavioral Characteristics of Superior Students (SRBCSS; Renzulli, Smith, White, Callahan, Hartman, Westberg, Gavin, Reis, Siegle, & Sytsma, 2004) and the Torrance Tests of Creative Thinking (TTCT; Torrance, 1990). The GRS was positively correlated to competencies related to giftedness in nearly all of these comparisons (Margulies & Floyd, 2004).

Scales for Rating the Behavioral Characteristics of Superior Students

As mentioned above, another gifted rating scale in current use is the SRBCSS, a 96-item teacher rating scale for students in grades K-12. This scale includes measures of 10 characteristics associated with giftedness: Learning, Creativity, Motivation, Leadership, Artistic, Musical, Dramatics, Communication (Precision), Communication (Expressiveness), and Planning.

The SRBCSS manual does not provide norms and encourages users to establish local norms to make eligibility decisions for gifted programs. It does not generate standard scores. The manual also does not include internal consistency reliability estimates. (Jarosewich, et al, 2002). Test-retest reliability coefficients were reported for only four of the 10 scales: Learning, Motivation, Creativity, and Leadership. The coefficients for these scales ranged from .77 to .91. The SRBCSS Manual reports inter-rater reliability ratings for Learning, Motivation, and Creativity scales ranging from .85 to .91 and for the Leadership scale, .67. It does not provide estimates for the remaining six scales (Jarosewich, et al, 2002). Studies of concurrent validity of Learning and Motivation subscales with tests of intelligence and achievement ranged from .41 to .61. Correlations with the Torrance Test of Creative Thinking and the Creativity subscale ranged from .29 to .48. The SRBCSS manual does not provide evidence of criterion-related validity (Jarosewich, et al, 2002).

Gifted and Talented Evaluation Scales

The Gifted and Talented Evaluation Scales (GATES; Gilliam, Carpenter, & Christensen, 1996) is another gifted rating scale currently available. GATES is a standardized, norm-referenced rating scale for children ages 5 through 18. This scale can be completed by teachers, parents, or others who are familiar with the student. It consists of 50 items and five scales that measure the areas of giftedness identified by the federal definition

of giftedness: Intellectual Ability, Academic Skills, Creativity, Leadership, and Artistic Talent (Jarosewich, et al, 2002).

The GATES was standardized on a sample of more that 1,000 students who had been identified as gifted. The criterion for inclusion in the gifted program for the standardization sample was not reported. The instrument's ceilings and floors are reported to be adequate, with the presence of standard scores at least two standard deviations above and below the mean (Jarosewich, et al, 2002).

Internal consistency reliability estimates are .90 and higher (per scale) for the GATES. Test-retest reliability was measured over a one-week interval. Estimates range from .42 to .98 across subtests. The GATES manual does not provide information about inter-rater reliability (Jarosewich, et al, 2002).

A discriminant analysis was conducted during the GATES scale development. The results suggest low sensitivity; the GATES incorrectly classified non-gifted students as gifted in leadership 60% of the time and incorrectly as gifted in the arts 58% of the time. Concurrent validity studies with other measures such as Renzulli Hartman, Williams scale, and the Comprehensive Scales of Student Ability, resulted in correlation coefficients ranging from .30 to .92 (Jarosewich, et al, 2002).

Gifted Evaluation Scale, Second Edition

A fourth rating scale currently in use is the Gifted Evaluation Scale, Second Edition (GES-2; McCarney & Anderson, 1998). It measures giftedness based on the areas identified in the federal definition (i.e., intellectual abilities, academic abilities, creativity, leadership, and artistic talent). In addition, an optional subscale, Motivation, is included. It contains 48 items and is designed for use by teachers or other school professionals.

The GES-2 was standardized on a sample of general education students who had not been identified as gifted. The standardization sample deviates appreciably from the demographic characteristics of the U.S. in terms of ethnicity, urban/suburban residence, and geographic area (Jarosewich, et al, 2002). Comparisons of the standardization sample with national census data show that the sample was predominantly white and urban-suburban. The sample overrepresented students in the Midwest and South and underrepresented students in the Northeast and West (Plake & Impara, 2001). The instrument is characterized as having sufficient floors, ceilings, and item gradients (Jarosewich, et al, 2002).

Estimates of internal consistency reported in the GES-2 manual range from .92 for each subscale to .99 for total scale. It appears that the scale items are homogenous and consistent (Jarosewich, et al, 2002). Test-rest reliability was assessed over a 30-day interval. The reliability coefficients range from .86 to .93 across subtests. Inter-rater reliability was determined by examining the ratings of two educators with purportedly equal knowledge of a student. Reliability coefficients ranged from .69 for Performing Arts to .91 for the total scale.

Factor analysis was conducted during the development of the instrument and results indicate high item cross-loading for the Intellectual, Creativity, and Specific Aptitude scales, i.e., the factors were not independent. Correlations between subscales ranged from .70 to .99. Inter-item correlations ranged from .61 to .84. Concurrent validity of the GES-2 with the GATES instrument ranged from .51 to .90 (Jarosewich, et al, 2002).

While the gifted screening scales described above have several positive features, each lack some important characteristics. None of these instruct the rater to emphasize the use of nonverbal assessment or to focus on the native language of the examinee. They were not developed for use with examinees that have limited English language skills. These are

serious limitations considering the increasing diversity found among the U.S. population. Another limitation of these scales is that none contain a measure of interpersonal or intrapersonal skills. Emotional intelligence is an area of cognition that is being increasingly recognized by many psychologists as critical to success and should be considered when assessing the overall functioning of a student. Lastly, only the SRBCSS encourages use of local norms. However, it does not build local norming into the scoring process. Establishing local norms can be useful because scores earned in one part of the country may not be a meaningful measure of giftedness in another part. These limitations will be addressed by the newly developed UNIT Gifted Screening Scale (UNIT – GSS).

UNIT – Gifted Screening Scale

The UNIT – GSS is a newly developed rating scale designed to assess giftedness as defined by the U.S. Department of Education (McCallum & Bracken, in press). The instrument consists of two clusters and eight scales. The General Academic Aptitude cluster consists of four scales: Cognitive Aptitude, Creative Aptitude, Emotional Aptitude, and Leadership Aptitude. The Specific Academic Aptitude Cluster consists of four scales: Language Arts Aptitude, Math Aptitude, Reading Aptitude, and Science Aptitude. It is intended to be used by teachers in the assessment of students ages 5 through 18. It is a screening test designed to identify school children that have the potential to become leaders in the arts, business, education, and science. In addition, it can be used as part of an overall evaluation that includes measures of intelligence, portfolios, auditions, actual performances, and so on. Once identified, the skills of these students can be nurtured in a more consistent and systematic fashion within the educational setting.

The UNIT – GSS is unique relative to other measures of giftedness in several ways. For example, in addition to the characteristics described in the federal definition it

also includes a measure of emotional aptitude. Unlike IQ, with its long history of research, the assessment of emotional intelligence is relatively new, though similar constructs have been described for decades (Thorndike, 1927). However, there is evidence, that as a group, people who are gifted tend to exhibit stronger emotional or personal adjustment than the general population. For example, early studies by Terman and Oden (1947) show lower incidences of mental illness and adjustment problems among gifted students than across the general population. In a study by Bracken and Brown (2006), 45 gifted and 45 general education students were rated by teachers and administrators using the Clinical Assessment of Behavior (CAB; Bracken & Keith, 2004). The CAB is a third-party behavior rating scale used to rate students' adaptive and behavior problems. In this study, gifted students were rated significantly higher on adaptive behavioral scales and significantly lower on several clinical scales. Results indicated that gifted and talented students displayed overall better behavioral adjustment than their general education peers. Similarly, Bain and Bell (2004) found that gifted students scored higher than non-gifted peers in areas related to self-concept, such as physical ability, physical appearance, and peer relations. Other studies have shown that characteristics common in popular children, such as good social skills, leadership, high self-esteem, and infrequent behavior problems are seen more frequently in gifted individuals (Frentz, Gresham, & Elliott, 1991; Jackson & Bracken, 1998; Kennedy, 1990). Others have provided additional evidence for higher levels of emotional adjustment among gifted students (Beer, 1991; Grossberg & Cornell, 1988; Nail & Evans, 1997).

Existing data suggest that emotional intelligence can, at times, be more powerful than IQ in accounting for the course of a person's life. For example, in a recent survey of 733 multimillionaires by Thomas Stanley, multi-millionaires were asked to list reasons for success; IQ was 21st out of 30 top reasons. The top five answers were all related to

emotional intelligence and included honesty, being well disciplined, getting along, and being hard working (Stanley, 2000). Gardner's (1983) theory of multiple intelligences includes both interpersonal and intrapersonal intelligences. He describes interpersonal intelligence as the ability to understand other people, such as what motivates them, how they work, and how to work cooperatively with them. He describes intrapersonal intelligence as the ability to understand the self and one's own feelings while having the ability to draw upon those feelings to guide appropriate behavior.

Other theorists have included similar constructs in their models of intelligence. Salovey and Mayer (1990) have incorporated Gardner's theory into their basic definition of emotional intelligence. They have included five abilities in their model; knowing one's emotions, managing emotions, motivating oneself, recognizing emotions in others, and handling relationships. People may differ in their abilities in each of these domains. According to Salovey and Mayer (1990), emotional intelligence requires the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thoughts and behaviors. Robert Sternberg provides evidence of the importance of such skills. He asked people to describe an "intelligent person." Practical people skills were among the main traits listed (Goleman, 1995). According to Goleman (1995), IQ accounts for only 25% of the variance in how well people perform in their careers. Similarly, Bar-On (2000) sampled over 8,000 managers, and found that EQ, as compared to IQ, accounted for greater than four times more effectiveness in job performance. Recently, both psychologists and lay people have come to agree that emotional intelligence is important. Those who are able to approach life tasks with emotional intelligence are most likely able to solve problems adaptively and have

experiences that lead to better outcomes and rewards for themselves and those around them (Salovey & Mayer, 1990).

Unlike other scales, the UNIT – GSS was designed to be sensitive to those with communication problems (e.g., those with speech, language, or hearing deficits) or who are culturally different from mainstream children (e.g., those for whom English is a second language). Previous research has shown that assessment procedures relying on the use of less verbally laden assessment strategies will produce a more accurate identification of gifted students and will increase the number of children from ethnically diverse populations in gifted programs (Plucker, Callahan, & Tomchin, 1996). According to Callahan (2005), one reason for the under representation of ethnic minorities in gifted programs is the acceptance of a very narrow conception of intelligence and giftedness. Giftedness is largely associated with traditional school skills including advanced vocabulary, highly developed verbal skills in written and oral expression in Standard English, and early and advanced reading skills. Teachers are seldom provided with ways to identify verbal talents that may exist in students who have not had opportunities to develop fluency and advanced expressive abilities in formal English (Callahan, 2005). Existing gifted screening scales were not developed for use with examinees that have limited English language skills, who are from other cultures, or who are nonverbal. The UNIT – GSS directions state that a student's rating should not be lowered if his or her primary language is not English. When this is the case teachers should focus on how well the examinees communicate, regardless of the language or medium used.

Another advantage of the UNIT – GSS is that it will be co-normed with the Universal Nonverbal Intelligence Test – Group version (UNIT-G; Bracken & McCallum, 1998) and can be used with that instrument for comparing the skills of an examinee with

that examinee's cognitive skills directly, through the same standardization sample. The UNIT-G is a group administered, nonverbal, intelligence test that is currently in development.

Lastly, the administration and scoring procedures adopted for the UNIT – GSS allows raters to compare the examinee to peers through the establishment of local norms. The use of the UNIT – GSS rating scale system allows determination of a student's standing on the various scales relative to peers in the local area. This comparison is possible because standardization data is used only to establish variability (i.e., variance measures) in the population for future comparison, not a mean "national standard." Local standards are considered by asking teachers to compare each child to "average" children in the area. This strategy is beneficial because scores (or mean scores) earned in one region of the country may not be useful indicators of giftedness in other regions.

Before a test can be used by practitioners, it is critical to first establish reliability and validity. The Standards for Educational and Psychological Testing (American Educational Research Association [AERA], American Psychological Association [APA], & National Council on Measurement in Education [NCME], 1999) describe validity as the most fundamental consideration in test development, and note that validity refers to the accumulated evidence in support of the "intended interpretation of test scores for the proposed purpose" (p.11). Validity can be established through a variety of strategies. These strategies indicate how test scores from one instrument relate to scores from another instrument purporting to measure similar or different constructs. Several types of validity may be examined. For instance, construct validity evidence includes strategies to determine whether a scale measures the hypothetical ability that it purports to measure. Concurrent

validity evidence includes strategies that demonstrate whether an instrument's scores correlate with a measure that has been previously validated.

While validity is described as the most critical of test characteristics, the reliability of an instrument directly affects and limits the instrument's validity. Reliability refers to the degree to which an instrument is consistent and stable in measuring what it is intended to measure. Test scores are not valid unless they are also reliable (AERA, 1999).

The purpose of this study is to examine the reliability and validity of the UNIT – GSS. The reliability was examined using Cronbach's Alpha for scales and composites. Concurrent validity was determined by examining correlation coefficients between scores from the UNIT – GSS and other instruments that measure similar constructs. In addition to the UNIT – GSS, instruments used include the GRS, the Bar-On Emotional Quotient Inventory: Youth Version [Bar-On EQ-i: YV (S); Bar-On & Parker, 2000], and the Terra Nova Comprehensive Test of Basis Skills (CTBS; CTB, 1996). The GRS was correlated to "like" scales of the UNIT - GSS. Additionally, the Emotional Aptitude scale of the UNIT - GSS was correlated to the Bar-On EQ-i: YV (S), and finally, the scores obtained on the Specific Academic Aptitude Cluster of the UNIT – GSS were correlated to the "like" composite scores of the CTBS. Construct validity was examined also by comparing the mean scores of students identified as gifted to those earned by non-gifted, average-performing students on all scales of the UNIT - GSS. Gifted and non-gifted students were matched based on gender, age, race, grade level, and classroom teacher.

CHAPTER II

METHOD

Participants

Thirty-nine general education teachers from a rural school system in a southeastern state participated in this study. Thirty-five of the teachers were female, 4 were male, and all were white. Participating teachers taught between the 2nd and 8th grade level. These teachers were selected because they taught students who had been previously identified as gifted. Each teacher rated no more than four students from his/her classroom using the UNIT – GSS and the GRS. The modal number rated by a teacher was two students. Students selected to be rated were between the ages of 7 and 13. Each student completed the Bar-On EQ-i: YV, a self-report measure of emotional intelligence. Those chosen were either previously identified as gifted or were matched to a student who was. Fifty-eight males and 48 females were assessed. Of the 106 students rated, 53 were participants in the school systems Gifted and Talented program. The remaining 53 students were not in the program but were matched to the gifted students based on gender, age, race, grade, and classroom teacher.

The gifted students had been identified using assessment procedures specified by the Tennessee State Department of Education. These guidelines state that a student may be identified as gifted using one of three options. Each option takes into consideration four different components; cognition, achievement, academic performance, and creative thinking. There are two ways of meeting eligibility requirements under Option 1. Option 1 (A) requires that a student earn all of the following components: a composite standard score of 130 or better on a standardized, individually administered test of cognition; a score at the 96th percentile or better on one or more areas of the CTBS or on a standardized,

individually administered achievement test; high academic performance, as demonstrated by grades in the top 3% for the school or by earning certain scores on a gifted screening scale; and a score at the 75th percentile or better on a standardized, individually administered test of creativity. The requirements under Option 1 (B) are the similar, the difference being that in addition to the score on the test of cognition, students need only two of the other components. However, the achievement component under this option requires that students earn scores at the 90th percentile or better at least on two areas of the CTBS or on a standardized, individually administered achievement test.

Option 2 requires that a student earn a composite standard score of 123 or better on a standardized, individually administered test of cognition, and two or more of the following components; a score at the 95th percentile or better on two areas of the CTBS or on a standardized, individually administered achievement test, or a score at the 90th percentile or better on three areas of the CTBS or on a standardized, individually administered achievement test; high academic performance, as demonstrated by grades in the top 3% for the school or by earning certain scores on a gifted screening scale; or a score at the 83rd percentile or better on a standardized, individually administered test of creativity.

Option 3 requires that a student earn three of the following: a composite standard score of 118 or better on a standardized, individually administered test of cognition; a score at the 95th percentile or better on three areas of the CTBS or on a standardized, individually administered achievement test, or a score at the 90th percentile or better on four areas of the CTBS or on a standardized, individually administered achievement test; high academic performance, as demonstrated by grades in the top 3% for the school or by earning certain scores on a gifted screening scale; or a score at the 90th percentile or better on a standardized, individually administered test of creativity.

Participants came from schools within rural, mainly low-income areas, with 75.2% of the students receiving free or reduced lunch. The student population at the time of data collection was 95.9% Caucasian, 2.6% African American, 1.1% Hispanic, and .5% other.

Instruments

The UNIT – GSS

As described previously, the UNIT – GSS (see Appendix) was designed to assess several aptitudes typically associated with giftedness. It consists of two clusters and eight scales. The General Aptitude cluster consists of four scales: Cognitive Aptitude, Creative Aptitude, Emotional Aptitude, and Leadership Aptitude. The Specific Academic Aptitude Cluster consists of four scales: Language Arts Aptitude, Math Aptitude, Reading Aptitude, and Science Aptitude. It is meant to be used by teachers in the assessment of students ages 5 through 18. Initial development of the UNIT – GSS relied on pilot data from approximately 90 participants. Factor analytic data from the pilot study were used to assign items to scales using a loading criterion of .35.

Each scale contains 15 items that are rated with a numerical ranking system ranging from 1 (well below average) to 5 (well above average). A rating of 2 indicates below average performance, a rating of 3 indicates average performance, and a rating of 4 indicates above average performance. Teachers are instructed to rate all performance or behavioral statements based on their knowledge of the child and relative to that of his or her same-aged peers in the local environment. Teachers are also instructed to consider the native language of the child and to focus on how well the child communicates, regardless of the language or medium used.

The following four scales make up the General Aptitude Cluster. The Cognitive Aptitude Scale requires the teacher to rate the student's abstract and logical reasoning,

problem solving ability, memory, cognitive speed, and quantitative facility. The Creative Aptitude Scale requires the teacher to rate the ability to produce novel and useful solutions to problems through divergent thinking. The Emotional Aptitude Scale assesses teacher's perceptions of the student's ability to get along with peers, recognize one's own and other's emotions, and manage emotions. The Leadership Aptitude scale requires the teacher to rate students' the ability to inspire confidence in others, successfully lead and positively influence group behavior, and understand the interpersonal dynamics and communications that force decision making.

The Specific Academic Aptitude Cluster consists of the following four scales, and all require teacher ratings of student's performance in the areas of language arts aptitude (assesses the student's ability in written and spoken language), math aptitude (measures the ability to use numbers, solve mathematical problems, and understand numerical relationships), reading aptitude (measures the ability to read fluently, prosodically, and with comprehension), and science aptitude (measures interest and abilities used in the process of analyzing the relationships found in nature and the experimental investigation of phenomena). An optional, informal rating scale allows rating of motivation, task persistence, problem solving success, etc.

In this study, scores from the UNIT - GSS were correlated with scores from scales of the GRS that measure similar constructs, specifically the Intellectual Ability scale, the Creativity scale, and the Leadership Ability scale. When using the GRS, teachers are instructed to rate each student on every item using a nine-point scale. The nine-point scale is divided into three ranges: 1-3 Below Average, 4-6 Average, and 7-9 Above Average. This format allows the teacher to determine first the range in which the student should be rated,

based on normative distinctions. Next, the teacher should determine, within the range, whether the student is at the bottom, middle, or top of that range.

Scores from the Emotional Aptitude Scale of the UNIT – GSS were correlated with scores from another instrument designed to assess emotional intelligence. The Bar-On EQ-i: YV (S) is a short version of self-report instrument designed to measure a number of constructs related to emotional intelligence in children aged 7 to 18. The Bar-On EQ-i: YV (S) measures the level of emotional and social functioning in children and adolescents. Respondents are required to answer a series of questions about themselves by selecting the most appropriate response. Response options range from "Very Seldom True of Me" to "Very Often True of Me."

The Bar-On EQ-i: YV (S) contains 30 items that make up five scales: Intrapersonal, Interpersonal, Stress Management, Adaptability, Positive Impression. The Intrapersonal scale measures the ability to understand his or her emotions and his or her ability to communicate those emotions to others. The Interpersonal scale measures the ability to have satisfying interpersonal relationships and to understand the emotions of others. The Stress Management scale measures the ability to manage and control emotions and to respond calmly to stressful events. The Adaptability scale measures the ability to be flexible, realistic, and effective in problem solving and managing change. The Positive Impression scale measures the likelihood that an individual has answered in a way that creates an overly positive self-impression.

In general, the Bar-On EQ-i: YV (S) is reported to be a psychometrically sound instrument. The scale was normed using 9,172 children and adolescents who attended general education classes in the U.S. and Canada. Roughly equal numbers of males and females were included in each age group. Norms were calculated separately by age and

gender. Internal reliability coefficients range from .65 to .90 with most of them in the .80 range. Test-retest reliability at three weeks range from .77 to .88 for each scale. The test-retest correlation for the total EQ-i was .89 for the regular version and .88 for the short version. Intercorrelations of domain scores range from .16 to .72, suggesting relatively distinct factors. Scores obtained on the EQ-i: YV was correlated to those of several other instruments. The highest correlations, .85, were between the EQ-i: YV Stress Management scale and the Anger Control Problems of the Conners-Wells Adolescent Self-Report Scale (CASS; Conners, 1997), which contain very similar items (Plake, Impara, & Spies, `2003).

Scores from the Specific Academic Aptitude Cluster of the UNIT – GSS, the Language Arts Aptitude scale, the Math Aptitude scale, the Reading Aptitude scale, and the Science Aptitude scale were correlated to scores from direct measures of these constructs from the Terra Nova Comprehensive Test of Basis Skills (CTBS). The CTBS is a standardized group achievement test designed for administration to students from Kindergarten through twelfth grade. However, the school system participating in this study administered the test only to students in grades 2 through 8. It is given in the spring of each school year. The instrument has two forms, A and B. CTBS scores used in this study included those from Reading Composite, comprised of Reading and Vocabulary subtests, Language Composite, comprised of Language Mechanics and Language subtests, Math Composite, comprised of Mathematics and Mathematics Computation subtests, and Science. These scores were reported as normal curve equivalents. The CTBS is used to assess a variety of reading, language, and math skills. The Reading subtest assesses the ability to read passages, comprehend their meaning, and use strategies that deepen understanding. The Vocabulary subtest measures the understanding of word meanings, multimeaning words, and words in context. The Language Mechanics subtest measures the

ability to use punctuation, capitalization, editing, proofreading, and other key writing strategies. The Language subtest measures skills related to using consonants, vowels, blends, diagraphs, contraction and compounds. The Mathematics subtest measures general problem-solving and mathematical-reasoning skills. The Mathematic Computation subtest measures the ability to do a variety of arithmetic operations. The Science subtest measures academic achievement related to science education.

The CTBS was normed on a large nationwide sample totaling 312,890. The sample accurately represented the U.S. population with few exceptions; the standardization group contained about 4% more African Americans than the U.S. population at the time. The standardization sample was also lower in socioeconomic status on several levels including parents' earnings, parents' education, and percentage of single parents. Internal consistency indices reported for the CTBS subtests were high, typically about .80, with the exception of the Language Mechanics subtest with coefficients of .55 and .59 for Forms A and B, respectively. These lower scores suggest that this subtest may be somewhat multidimensional, particularly at the upper levels (Hopkins & Miller, 1992).

Procedure

Teachers selected to participate in this study were those teaching students identified as gifted. The Director of Special Education within the school system provided the investigator with this list of teachers. These teachers were provided a consent form explaining the methods to be used in this study. They were informed of the nature and approximate length of the instruments used. They were also informed that participation was voluntary and that they could withdraw from the study at any time without penalty. Each teacher who agreed to participate was given parent consent forms to be taken home by the gifted students and returned to the teacher. The consent form explained the purpose of

the research project, that the Bar-On EQ-i: YV was to be administered, and the approximate amount time students would be out of the classroom for testing. The consent form also explained that participation in the study was entirely voluntary.

Once the parent consent form was signed and returned, the investigator was provided with the names of the gifted students. The investigator and participating teachers then met to discuss the project and select non-gifted students as matches to the gifted participants. Participating matched students were also given the parent consent form to be signed and returned. After all consent forms were returned, teachers were given specific instructions in how to use the UNIT – GSS and the GRS. Next, they rated participating gifted and non-gifted students.

The investigator took participating students into an available classroom to complete the Bar-On EQ-i: YV. Each of these students was given an assent form explaining the purpose of the instrument and the approximate amount of time the instrument would take to complete. The assent form also informed students that there was no penalty for choosing not to participate, and likewise, no reward for choosing to participate. This form was reviewed with each student to assure understanding. Students were given breaks as often as needed.

All testing materials were coded should parents or teachers request feedback on a particular student's results. If requested, feedback was given in terms of strengths and weaknesses evidenced on the various instruments used.

Data Analyses

The reliability of the UNIT – GSS was explored by examining Cronbach's Alphas for each of the instrument's scales. In order to examine concurrent validity, scores from three scales of the UNIT – GSS General Aptitude cluster were correlated to scores from

three of the GRS scales. The UNIT – GSS Cognitive Aptitude Scale was correlated to the GRS Intellect Scale, the UNIT – GSS Creative Aptitude Scale was correlated to the GRS Creativity Scale, and the UNIT – GSS Leadership Aptitude Scale was correlated to the GRS Leadership Scale. The concurrent validity of the Emotional Aptitude scale of the UNIT – GSS, which is also part of the General Aptitude cluster, was examined by comparing students' scores on this scale to scores obtained on the Bar-On EQ-i: YV (S).

Concurrent validity of the Specific Academic Aptitude Cluster (Language Arts Aptitude, Math Aptitude, Reading Aptitude, and Science Aptitude) of the UNIT – GSS was explored by examining the correlations between scores from this cluster to the scores earned on the Language Composite, Reading Composite, Math Composite, and Science Composite of the CTBS.

Further, construct validity of the instrument was examined by comparing the UNIT – GSS scores of the students in the Gifted and Talented program to those of matched students who were not part of that program and also received no other special education services. Mean score differences and discriminant function analysis were produced.

CHAPTER III

RESULTS

In order to determine the psychometric qualities of the UNIT – GSS, several analyses were conducted. Both reliability and validity indices were obtained. Table 1 (all tables are shown in Appendix B) shows means and standard deviations for all variables for gifted and non-gifted participants.

For gifted participants, results indicate that the mean scores for all instruments, excluding the Bar-On EQ-i: YV, were higher than would be expected from the normal population. A rating of 3 indicates average performance on the UNIT – GSS items. Mean scale scores for gifted students range from 3.61 to 4.21 with standard deviations ranging from .45 to .79. Mean scores for non-gifted students range from 2.85 to 3.17 with standard deviations ranging from .49 to .62. The GRS has a population mean of 50 and a standard deviation of 10. The gifted group earned scores with means ranging from 53.21 to 55.78 with standard deviations ranging from 7.01 to 9.19. The non-gifted group earned scores with means ranging from 46.55 to 48.13 and standard deviations ranging from 6.61 to 7.27. Normatively, the Bar-On EQ-i: YV uses a population mean of 100 and a standard deviation of 15. The gifted group earned a mean score of 104.98 with a standard deviation of 10.71. The non-gifted group earned a mean score of 89.00 with a standard deviation of 13.20. Normative scores from the CTBS have mean of 50 and a standard deviation of 21.06. This sample of gifted students earned scores with means ranging from 80.25 to 83.55 with standard deviations ranging from 9.89 to 11.48. The non-gifted group earned scores with means ranging from 53.32 to 59.83 with standard deviations ranging from 10.61 to12.24.

Reliability

Reliability of the UNIT – GSS was explored by examining Cronbach's Alphas for each scale. Alphas for each scale are high and scores range from .95 (Creative Arts Aptitude) to .98 (Cognitive Aptitude, Language Arts Aptitude, and Math Aptitude). These scores reveal very little error in the measures. Reliability estimates are shown in Table 2.

Concurrent Validity

In order to examine the concurrent validity of the UNIT – GSS, scores from each of its eight scales were correlated to scales from other instruments that measure similar constructs. Correlations for the General Academic Aptitude scales are shown in Table 3. The UNIT – GSS and the GRS both contain measures of intellectual, creativity, and leadership ability. Scores from these "like" scales were correlated. Of the three, the correlation between the cognitive or intellectual scales is highest, .85, $p < .01$. The correlation between the creativity scales is lowest, .70, $p < .01$. Of the three, the correlation between the leadership scales is intermediate, .76, $p < .01$.

Scores from the Emotional Aptitude Scale were correlated to participants' scores from the Bar-On EQ-i: YV (S). The correlation between the two instruments is .47, $p < .01$.

Scores from the four scales of the UNIT – GSS Specific Academic Aptitude cluster: Language Arts Aptitude, Math Aptitude, Reading Aptitude, and Science Aptitude, were correlated to participants' scores on the CTBS end-of-year achievement test scores. The CTBS scores were obtained from the Reading/Language Arts Composite, Mathematics Composite, and Science Composite scores. Correlations were corrected for a restriction in range. Correlations between the like scales of these instruments range from .60 to .64 ($p < .01$) (.68 to .72, $p < .01$ corrected). These results are shown in Table 4.

Construct Validity

The construct validity of the UNIT – GSS was examined by comparing the UNIT – GSS mean scores of the students identified as gifted to those of matched students who were not identified as gifted and who received no special education services. A multivariate analysis of variance (MANOVA) was used to compare the scores of the gifted students to those of the non-gifted students. The results of the MANOVA (Wilks' Lambda, .28, $F(8,97) = 30.616$, $p < .001$) indicate that the composite mean of all UNIT – GSS variables for the gifted students is statistically significantly higher than the composite mean for the non-gifted students. The mean differences between the scores of gifted students and matched non-gifted students were compared on all scales of the UNIT – GSS in post-hoc analyses. Table 5 shows for each scale, the mean scores and standard deviations for both groups and effect sizes for each comparison. Conceivably, mean scores range from 1 to 5 for each scale. Mean scores for the gifted students range from 3.61 to 4.21. Mean scores for the non-gifted students range from 2.85 to 3.09. For each scale, mean scores were always significantly higher for the gifted group. Mean score differences between the two groups range from .44 on the Emotional Aptitude Scale to 1.34 on the Cognitive Aptitude Scale. Effect sizes were moderate to large. Using all eight scales a canonical discriminant analysis was produced to determine the predictive validity of the UNIT – GSS. The results (Wilks' Lambda, .28, $p < .001$) indicate that the instrument correctly classified a total of 95.3% of students based on their original grouping. Of the 106 students included in this study, the UNIT – GSS correctly classified 101 of them. It produced four false negative classifications and one false positive classification. These results are shown in Table 6.

CHAPTER IV

DISCUSSION

Data reported in this study address the psychometric properties of the UNIT – GSS, specifically, the reliability and validity. The study addresses the requirements critical for test development as described by the Standards for Educational and Psychological Testing (AERA, 1999). The results are discussed below followed by a section describing limitations and implications for further research.

Reliability of the UNIT – GSS

Reliabilities for the instrument are high with Cronbach's Alphas ranging from .95 for the Creative Arts Aptitude Scale to .98 for three other scales: Cognitive Aptitude, Language Arts Aptitude, and Math Aptitude. This data suggests that the items on each scale of the UNIT – GSS are homogeneous and that the instrument has a high level of internal consistency for each scale. Consequently, scores can be interpreted with confidence, i.e., there is little error. These reliabilities are similar to those from other gifted scales (e.g., GRS, GATES, SRBCSS).

Concurrent Validity of the UNIT – GSS

Concurrent validity refers to an instrument's ability to vary directly with a measure of the same construct. In order to examine the concurrent validity of the UNIT – GSS, scores from each scale were correlated to participants' scores on other established instruments that measure similar constructs.

Both the UNIT – GSS and the GRS contain measures of intellectual, creativity, and leadership ability. Results indicated that the correlations between these two instruments are strong. The strongest correlation between these two instruments was found between the cognitive or intellectual scales ($r = .85$, $p < .01$), shared variance of 72%. Because traits

typically associated with giftedness are those also associated with intellectual ability, it is not surprising that this correlation is the srongest. The correlation between the leadership scales was also high ($r = .76, p < .01$), shared variance of 58%. Similarly, the correlation between the creativity scales was high ($r = .70, p < .01$), shared variance of 49%. In general, these scores are high and suggest that constructs assessed on both instruments are similar. However, the scales also contain some unique variance. Scrutiny shows that while many items contained on "like" scales appear to assess similar constructs, the items are not identical and may be interpreted differently. For example one item on the UNIT – GSS Creative Arts Aptitude scale is "produces innovative and novel ideas and products." A similar item on the GRS Creativity scale is "generates unique or creative ideas to solve a problem or issue." Although these items appear to measure very similar constructs, one participating teacher gave an "average" rating for the UNIT – GSS item but gave the highest possible score, an "above average" rating for the same student on the GRS item. In other words, despite the similarities, raters may interpret similar items differently. In addition, both the UNIT – GSS and GRS contains some items that are unique (to each scale). This is understandable because the constructs assessed are not simple.

The concurrent validity between the UNIT – GSS and the Bar-On EQ-i: YV (S) is moderately strong, $r = .47, p < .01$, shared variance of 22%. While this correlation is not as strong as those between the UNIT – GSS and other instruments, it should be noted that the Bar-On EQ-i: YV (S) is a self-report instrument while the UNIT – GSS is completed by the teacher. As a result, the correlation between the scores earned by participants on these two instruments may be limited by "method" differences (i.e., different rater's perspectives). Even though the instruments contain items that appear similar, because the rating method differs, the items may be interpreted differently. For example, the UNIT –

GSS Emotional Aptitude scale contains items that measure a teacher's perceptions about a student's abilities to regulate emotions and behave appropriately in given situations, i.e., "is diplomatic in confrontational situations." The items on the Bar-On EQ-i: YV (S) are stated in more simplistic terms and measure a student's perceived abilities and behaviors in given situations, i.e., "I am good at solving problems." The items on the Bar-On EQ-i: YV (S) also appear to focus more on the inner feelings of the individual student i.e., "I think I am the best in everything I do," while the items on the UNIT – GSS appear to focus more on how well the student reacts to the surrounding environment i.e., "is sensitive to others' emotions."

Coefficients between scores from the Language Arts Aptitude, Math Aptitude, Reading Aptitude, and Science Aptitude scales of the UNIT – GSS Specific Academic Aptitude cluster and the CTBS end-of-year achievement test scores (i.e., Reading/Language Arts Composite, Mathematics Composite, and Science Composite) were strong. Among these, the strongest correlation is .64, $p < .01$ (.72, $p < .01$ corrected), shared variance of 41% (52% corrected) between the CTBS Reading/Language Arts Composite and the UNIT – GSS Language Aptitude Scale. Other correlations ranged from .60 to .62 ($p < .01$) (.68 to .69, $p < .01$ corrected) between the similar scales of the two instruments, shared variances ranging from 36% to 38% (46% to 47% corrected).

Several variables may have affected correlations between these two instruments. As with the Bar-On EQ-i: YV (S) and the UNIT – GSS, "method" differences may have had an impact on these correlations. The CTBS is a direct measure of student achievement while the UNIT – GSS is a teacher informant, or indirect measure. Time is another variable possibly affecting correlations. Scores from the two measures were obtained a year apart. The UNIT – GSS was given at the end of one school year while CTBS scores were

obtained near the end of the previous school year. Given these differences, the scores are high and suggest the UNIT – GSS is a good screening instrument for academic areas.

Construct Validity of the UNIT – GSS

Construct validity refers to whether a scale measures the hypothetical ability that it purports to measure, such as giftedness. One strategy for examining the construct validity of the UNIT – GSS is to compare the scores of students previously identified as gifted to those of matched, average-performing students on each of the instrument's eight scales. Results showed that for each of these scales, mean scores were systematically higher for the gifted group as compared to the non-gifted group. Based on teacher's ratings, members of the gifted group performed better on each of the eight areas measured and on a composite mean, as determined by MANOVA results. Mean score differences between the two groups ranged from .44 ($p < .002$) on the Emotional Aptitude Scale to 1.34 ($p < .001$) on the Cognitive Aptitude Scale and effect sizes ranged from .30 to .80. The smallest difference between gifted and non-gifted was obtained on the Emotional Aptitude Scale, while the largest amount of difference between groups occurred on the Cognitive Aptitude Scale.

Canonical discriminant function analysis results provide strong support for the predictive validity of the UNIT – GSS. The instrument correctly classified 95.2% of students previously identified as gifted and 98.1% of students previously identified as non-gifted.

The results of this study provide evidence for UNIT – GSS validity. The UNIT – GSS measures constructs in a manner similar to other proven instruments and appears to be capable of differentiating between gifted and non-gifted students. Practitioners may view the UNIT – GSS as the rating scale of choice for several reasons. For example, advantages

include recent standardization, inclusion of a "local norming" score scheme, sensitivity to those with communication barriers (e.g., those with speech, language or hearing deficits, or those for whom English is a second language), and the inclusion of a measure of emotional aptitude.

Limitations and Implications

This study provides support for the psychometric integrity of the UNIT – GSS. It can provide a reasonable operationalization of giftedness and is an appropriate instrument for giftedness screening. In addition, it offers some unique advantages, as mentioned above. However, further research using the UNIT – GSS is needed. The school system within which data was collected is in the southeast and has a population of 95.9% Caucasian students. As a result, few students from any minority groups were represented. Even though there were a small number of African American students identified as gifted within this school system, they could not be included in this study, either because they or their matched non-gifted student failed to return a parental consent form. Additionally, all students participating in this study spoke English. There were no hearing impaired students or English language learners. Furthermore, while the UNIT – GSS is designed to assess students of ages 5 to 18, the sample only included students between the ages of 7 and 13 in grades 2 through 8. Because the aim of the study was to correlate scores from the UNIT – GSS with those from other, similar instruments, the study was restricted to using participants whose ages were also appropriate for those other instruments. For instance, the GRS is designed to assess students between the ages of 6 and 13. Therefore, this study did not use participants older than 13 years of age. Also, because the CTBS was only administered to students in grades 2 through 8, this study did not include anyone below the age of 7. As a result, cautious interpretation is suggested. Further research using the UNIT

– GSS should include a more diverse sample of students of various races, cultures, ages, economic levels, and geographic locations.

Further research investigating the relationships between the UNIT – GSS scales and other measures is encouraged. For example, because the UNIT – GSS is designed to be completed by a third party informant, namely the teacher, concurrent validity of it to a third-party measure of emotional intelligence would be of interest (rather than the self-report measure used in this study). Additionally, future research involving students having communication barriers is encouraged. Because no participants in this study were English language learners nor had any other type of communication barrier, teachers were not required to consider the native language of the students being rated. Therefore, this facet of the instrument was not examined. In addition, predictive validity studies are needed. One purpose of the UNIT – GSS is screening students for entrance into gifted programs. Studies using specific operationalizations of school success as criterion measures should be conducted.

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APPENDICES

APPENDIX A

UNIT – GIFTED SCREENING SCALE

UNIT–Giftedness Screening Scale

Directions for Administration

The *UNIT– Giftedness Screening Scale* (UNIT - GSS) is designed to assess aptitudes typically associated with giftedness and should be completed by a teacher who knows the student well. It consists of two composites and eight scales. The General Aptitudes composite consists of four scales: Cognitive Aptitude, Creative Arts Aptitude, Emotional Aptitude, and Leadership Aptitude. The Specific Academic Aptitudes composite consists of four scales: Language Arts Aptitude, Math Aptitude, Reading Aptitude, and Science Aptitude.

Each scale contains multiple items, which are rated with a numerical ranking system that ranges from 1 (well below average) to 5 (well above average). Average performance on each item is defined by a rating of 3, which should be assigned if the teacher believes that the student exhibits behavior typical of age mates in the same geographical area (i.e., the same school or school system). Ratings at the extremes (i.e., 1 and 5) are used to describe a student whose behavior is extreme—either well below or well above the average of peers. Ratings of 2 (below average) and 4 (above average) are used to describe a student whose behavior is not extreme but is clearly either below or above the average student within the local context.

Teachers should rate all performance or behavioral statements to the best of their ability and their knowledge of the student. Teachers should consider the student's performance or behavior relative to that of his or her same-aged peers in the local environment, and they should also consider the student's interactions with peers and adults. For each item, the teacher should mark the response that best characterizes the student's performance or behavior. Judgments about the student's behavior should be based on local

expectations. A student's rating should not be adversely affected if his or her primary language is not English. In such cases, teachers should focus on how well the student communicates, regardless of the language or medium used. Please use a pencil to mark all responses.

GENERAL APTITUDES COMPOSITE

Cognitive Aptitude

	Well Below Avg.	Below Avg.	Avg.	Above Avg.	Well Above Avg.
	1	2	3	4	5
The student…					
1. understands complex quantitative relationships.	**1**	**2**	**3**	**4**	**5**
2. displays advanced formal or technical knowledge.	**1**	**2**	**3**	**4**	**5**
3. generalizes information across situations.	**1**	**2**	**3**	**4**	**5**
4. explains complicated concepts effectively.	**1**	**2**	**3**	**4**	**5**
5. enjoys thinking about or processing abstract ideas.	**1**	**2**	**3**	**4**	**5**
6. asks thoughtful questions.	**1**	**2**	**3**	**4**	**5**
7. analyzes problems carefully before acting.	**1**	**2**	**3**	**4**	**5**
8. learns with minimal instruction.	**1**	**2**	**3**	**4**	**5**
9. actively engages with problems until solved.	**1**	**2**	**3**	**4**	**5**
10. enjoys learning new facts from people or almanacs and encyclopedias.	**1**	**2**	**3**	**4**	**5**
11. thinks at a deep, conceptual level.	**1**	**2**	**3**	**4**	**5**
12. quickly uncovers faulty logic in arguments.	**1**	**2**	**3**	**4**	**5**
13. is adept at discerning spatial relationships.	**1**	**2**	**3**	**4**	**5**
14. makes correct decisions efficiently.	**1**	**2**	**3**	**4**	**5**
15. displays a vast knowledge of factual information.	**1**	**2**	**3**	**4**	**5**

Creative Arts Aptitude	Well Below Avg.	Below Avg.	Avg.	Above Avg.	Well Above Avg.
The student…	1	2	3	4	5
1. expresses self creatively (e.g., jokes, poems, or songs).	**1**	**2**	**3**	**4**	**5**
2. demonstrates a vivid imagination.	**1**	**2**	**3**	**4**	**5**
3. demonstrates rhythm, melody, and pitch.	**1**	**2**	**3**	**4**	**5**
4. produces creative drawings and paintings.	**1**	**2**	**3**	**4**	**5**
5. engages in unusual but appealing play or other activities.	**1**	**2**	**3**	**4**	**5**
6. uses toys or gadgets in unusual but productive ways.	**1**	**2**	**3**	**4**	**5**
7. exhibits detail and elaboration in artwork.	**1**	**2**	**3**	**4**	**5**
8. decorates personal space with flair.	**1**	**2**	**3**	**4**	**5**
9. engages in artistic activities.	**1**	**2**	**3**	**4**	**5**
10. produces creative artwork from routine materials.	**1**	**2**	**3**	**4**	**5**
11. acquires artistic skills.	**1**	**2**	**3**	**4**	**5**
12. improvises using artistic media.	**1**	**2**	**3**	**4**	**5**
13. produces innovative and novel ideas and products.	**1**	**2**	**3**	**4**	**5**
14. quickly learns artistic skills.	**1**	**2**	**3**	**4**	**5**
15. recognizes artistically pleasing objects.	**1**	**2**	**3**	**4**	**5**

Emotional Aptitude	Well Below Avg.	Below Avg.	Avg.	Above Avg.	Well Above Avg.
The student…	1	2	3	4	5
1. is sensitive to others' emotions.	**1**	**2**	**3**	**4**	**5**
2. is respectful of others' feelings.	**1**	**2**	**3**	**4**	**5**
3. is optimistic and cheerful.	**1**	**2**	**3**	**4**	**5**
4. expresses emotions in a healthy manner.	**1**	**2**	**3**	**4**	**5**
5. regulates own emotions.	**1**	**2**	**3**	**4**	**5**
6. inspires peers to share their emotions.	**1**	**2**	**3**	**4**	**5**
7. empathizes with others.	**1**	**2**	**3**	**4**	**5**
8. exhibits a calming influence when needed.	**1**	**2**	**3**	**4**	**5**
9. delays personal gratification cheerfully.	**1**	**2**	**3**	**4**	**5**
10. is emotionally resilient during difficult times.	**1**	**2**	**3**	**4**	**5**
11. manages difficult situations gracefully.	**1**	**2**	**3**	**4**	**5**
12. is diplomatic in confrontational situations.	**1**	**2**	**3**	**4**	**5**
13. monitors the emotional tenor within a group.	**1**	**2**	**3**	**4**	**5**
14. exhibits a consistently healthy emotional demeanor.	**1**	**2**	**3**	**4**	**5**
15. maintains relationships.	**1**	**2**	**3**	**4**	**5**

Leadership Aptitude	Well Below Avg.	Below Avg.	Avg.	Above Avg.	Well Above Avg.
	1	2	3	4	5
The student...					
1. is considered a leader by peers.	**1**	**2**	**3**	**4**	**5**
2. volunteers to lead group work.	**1**	**2**	**3**	**4**	**5**
3. instills optimism in others.	**1**	**2**	**3**	**4**	**5**
4. conveys a "can do" attitude.	**1**	**2**	**3**	**4**	**5**
5. enthusiastically attempts challenging assignments.	**1**	**2**	**3**	**4**	**5**
6. inspires confidence in others.	**1**	**2**	**3**	**4**	**5**
7. is flexible when working with others.	**1**	**2**	**3**	**4**	**5**
8. is considered by others to be honest and trustworthy.	**1**	**2**	**3**	**4**	**5**
9. motivates others to act through personal efforts.	**1**	**2**	**3**	**4**	**5**
10. helps others prioritize options.	**1**	**2**	**3**	**4**	**5**
11. engenders a sense of partnership among others.	**1**	**2**	**3**	**4**	**5**
12. motivates others to contribute to group activities.	**1**	**2**	**3**	**4**	**5**
13. leads by example.	**1**	**2**	**3**	**4**	**5**
14. takes appropriate risks or tries new things.	**1**	**2**	**3**	**4**	**5**
15. cooperatively conforms to others' expectations when necessary to achieve goals.	**1**	**2**	**3**	**4**	**5**

SPECIFIC ACADEMIC APTITUDES COMPOSITE

Language Arts Aptitude **The student...**	**Well Below Avg.**	**Below Avg.**	**Avg.**	**Above Avg.**	**Well Above Avg.**
	1	**2**	**3**	**4**	**5**
1. displays advanced prespelling or spelling skills.	**1**	**2**	**3**	**4**	**5**
2. expresses ideas cogently in writing.	**1**	**2**	**3**	**4**	**5**
3. exhibits sound writing techniques.	**1**	**2**	**3**	**4**	**5**
4. expresses ideas through creative writing.	**1**	**2**	**3**	**4**	**5**
5. enjoys participating in language arts competitions (e.g., spelling bees).	**1**	**2**	**3**	**4**	**5**
6. articulates thoughts clearly.	**1**	**2**	**3**	**4**	**5**
7. demonstrates an extensive vocabulary.	**1**	**2**	**3**	**4**	**5**
8. translates ideas into words and passages effectively.	**1**	**2**	**3**	**4**	**5**
9. monitors own quality of writing.	**1**	**2**	**3**	**4**	**5**
10. carefully edits own work.	**1**	**2**	**3**	**4**	**5**
11. creates plays on words, puns, or double entendres.	**1**	**2**	**3**	**4**	**5**
12. displays an extensive vocabulary.	**1**	**2**	**3**	**4**	**5**
13. is careful to use correct vocabulary or grammar.	**1**	**2**	**3**	**4**	**5**
14. demonstrates an extensive understanding of language structure.	**1**	**2**	**3**	**4**	**5**
15. displays an extensive knowledge of syntax and semantics.	**1**	**2**	**3**	**4**	**5**

Math Aptitude **The student…**	Well Below Avg.	Below Avg.	Avg.	Above Avg.	Well Above Avg.
	1	2	3	4	5
1. recognizes and identifies numbers of various magnitudes.	**1**	**2**	**3**	**4**	**5**
2. mentally sums series of numbers accurately.	**1**	**2**	**3**	**4**	**5**
3. quickly completes math fact problems.	**1**	**2**	**3**	**4**	**5**
4. demonstrates understanding of numerical relationships.	**1**	**2**	**3**	**4**	**5**
5. uses math symbols accurately.	**1**	**2**	**3**	**4**	**5**
6. solves written-word problems.	**1**	**2**	**3**	**4**	**5**
7. solves applied-math problems.	**1**	**2**	**3**	**4**	**5**
8. demonstrates understanding of number sentences and equations.	**1**	**2**	**3**	**4**	**5**
9. enjoys measuring or manipulating length, weight, distance, area, or time.	**1**	**2**	**3**	**4**	**5**
10. is fascinated by abstract concepts of mathematics.	**1**	**2**	**3**	**4**	**5**
11. translates math concepts into daily applications.	**1**	**2**	**3**	**4**	**5**
12. applies math concepts to other subject areas.	**1**	**2**	**3**	**4**	**5**
13. recognizes and appreciates mathematical properties of objects.	**1**	**2**	**3**	**4**	**5**
14. understands the math relationships associated with gears, pulleys, levers, and other simple machines.	**1**	**2**	**3**	**4**	**5**
15. fascinated with theoretical math issues related to science or astronomy.	**1**	**2**	**3**	**4**	**5**

Reading Aptitude

The student…

	Well Below Avg.	Below Avg.	Avg.	Above Avg.	Well Above Avg.
	1	2	3	4	5
1. reads regularly	**1**	**2**	**3**	**4**	**5**
2. demonstrates and understanding of phonics.	**1**	**2**	**3**	**4**	**5**
3. demonstrates and understanding of root words.	**1**	**2**	**3**	**4**	**5**
4. reads fluently.	**1**	**2**	**3**	**4**	**5**
5. regularly reads for pleasure.	**1**	**2**	**3**	**4**	**5**
6. demonstrates reading comprehension.	**1**	**2**	**3**	**4**	**5**
7. enjoys reading to others.	**1**	**2**	**3**	**4**	**5**
8. correctly answers questions based on stories he or she has read.	**1**	**2**	**3**	**4**	**5**
9. reads aloud with appropriate expression.	**1**	**2**	**3**	**4**	**5**
10. comprehends while reading silently.	**1**	**2**	**3**	**4**	**5**
11. enjoys listening to others read aloud.	**1**	**2**	**3**	**4**	**5**
12. chooses to read advance grade-level materials.	**1**	**2**	**3**	**4**	**5**
13. tends to select very complex literature.	**1**	**2**	**3**	**4**	**5**
14. understands subtle humor in literature.	**1**	**2**	**3**	**4**	**5**
15. accurately reads passages in all content areas.	**1**	**2**	**3**	**4**	**5**

Science Aptitude **The student...**	Well Below Avg.	Below Avg.	Avg.	Above Avg.	Well Above Avg.
	1	2	3	4	5
1. Shows interest in observing natural events (e.g., lunar eclipse, eggs hatching).	1	2	3	4	5
2. Is deliberate when investigating scientific events (e.g., earthquakes, space flight).	1	2	3	4	5
3. Exhibits interest in life sciences (e.g., plants, animals).	1	2	3	4	5
4. Develops sound questions or hypotheses.	1	2	3	4	5
5. Uses evidence to support a point of view.	1	2	3	4	5
6. Exhibits interest in earth sciences (e.g., rock formations, soil).	1	2	3	4	5
7. Creates exhibits to display scientific results (e.g., pictures, models, graphs, tables).	1	2	3	4	5
8. Is curious about the lawful relationships in nature (e.g., force, gravity, life cycle).	1	2	3	4	5
9. Explores cause and effect relationships.	1	2	3	4	5
10. Predicts consequences of natural events.	1	2	3	4	5
11. Collects objects related to science (e.g., rocks, rockets, insects).	1	2	3	4	5
12. Notices minute details about natural events.	1	2	3	4	5
13. Understands scientific concepts (e.g., classification, laws, principles).	1	2	3	4	5
14. Exhibits an interest in physical sciences (e.g., astronomy, physics).	1	2	3	4	5
15. Exhibits interest in social sciences (e.g., interpersonal relations, emotions, self).	1	2	3	4	5

APPENDIX B

TABLES

Table 1

Means and Standard Deviations of the UNIT – Gifted Screening Scale (UNIT – GSS), the Gifted Rating Scales (GRS), the Bar-On Emotional Quotient: Youth Version Short Form (Bar-On EQ-i: YV [S]), and the Terra Nova Comprehensive Test of Basic Skills (CTBS)

	Gifted		Non-gifted	
Instrument	*M*	*SD*	*M*	*SD*
UNIT – GSS Cognitive Aptitude	4.21[a]	0.45[a]	2.87[a]	0.56[a]
UNIT – GSS Creative Arts Aptitude	3.67[a]	0.47[a]	2.86[a]	0.49[a]
UNIT – GSS Emotional Aptitude	3.61[a]	0.79[a]	3.17[a]	0.62[a]
UNIT – GSS Leadership Aptitude	3.79[a]	0.72[a]	3.09[a]	0.57[a]
UNIT – GSS Language Arts Aptitude	4.01[a]	0.62[a]	2.88[a]	0.59[a]
UNIT – GSS Math Aptitude	4.14[a]	0.57[a]	2.86[a]	0.51[a]
UNIT – GSS Reading Aptitude	4.17[a]	0.54[a]	3.01[a]	0.60[a]
UNIT – GSS Science Aptitude	4.10[a]	0.58[a]	2.85[a]	0.51[a]
GRS Intellectual	65.02[b]	7.32[b]	46.55[b]	6.61[b]
GRS Creativity	61.32[b]	7.01[b]	48.13[b]	7.27[b]
GRS Leadership	58.30[b]	9.19[b]	48.11[b]	6.96[b]
Bar-On EQ-i: YV	104.98[c]	10.71[c]	89.00[c]	13.20[c]
CTBS Reading/Language Arts Composite	83.55[d]	9.89[d]	56.53[d]	10.61[d]
CTBS Math Composite	83.17[d]	11.48[d]	59.83[d]	12.24[d]
CTBS Science Composite	80.25[d]	11.14[d]	53.32[d]	12.11[d]

Note. n = 53 for gifted, n = 53 for non-gifted.

[a] gifted sample mean = 3.96, standard deviation = .64, non-gifted sample mean = 2.95, standard deviation = .57. [b] population mean = 50, standard deviation = 10. [c] population mean = 100, standard deviation = 15. [d] population mean = 50, standard deviation = 21.06.

Table 2

Reliability of the UNIT – Gifted Screening Scale (UNIT – GSS)

UNIT – GSS Scale	Cronbach's Alpha
Cognitive Aptitude	.98
Creative Arts Aptitude	.95
Emotional Aptitude	.97
Leadership Aptitude	.96
Language Arts Aptitude	.98
Math Aptitude	.98
Reading Aptitude	.97
Science Aptitude	.97

Table 3

Correlations Among the UNIT – Gifted Screening Scale (UNIT – GSS) General Aptitude Scales, the Gifted Rating Scales (GRS), and the Bar-On Emotional Quotient: Youth Version Short Form (Bar-On EQ-i: YV [S])

		GRS Intellect	GRS Creativity	GRS Leadership	Bar-On EQ-i: YV (S)
UNIT - GSS Cognitive Aptitude	Pearson Correlation	.85*	.65*	.65*	.50*
UNIT - GSS Creative Arts Aptitude	Pearson Correlation	.67*	.70*	.55*	.39*
UNIT - GSS Leadership Aptitude	Pearson Correlation	.56*	.55*	.76*	.52*
UNIT - GSS Emotional Aptitude	Pearson Correlation	.36*	.37*	.65*	.47*

Note. $N = 106$,

* Correlation is significant at the 0.01 level (2-tailed).

Table 4

Uncorrected and (Corrected) Correlations Between the UNIT – Gifted Screening Scale (UNIT – GSS) Academic Aptitude Scales and the Comprehensive Test of Basic Skills (CTBS) Scales

		CTBS Math Composite	CTBS Reading/ Language Arts Composite	CTBS Science Composite
UNIT - GSS Math Aptitude	Pearson Correlation	.60* (.69)*	.63*	.63*
UNIT - GSS Language Arts Aptitude	Pearson Correlation	.57*	.64* (.72)*	.60*
UNIT - GSS Reading Aptitude	Pearson Correlation	.54*	.64 (.72)*	.62*
UNIT - GSS Science Aptitude	Pearson Correlation	.56*	.60*	.62* (.68)*

Note. Corrected correlations appear in parentheses.

* Correlation is significant at the 0.01 level (2-tailed).

Table 5

UNIT – Gifted Screening Scale (UNIT – GSS) Gifted and Non-gifted Comparisons

UNIT – GSS Scale	Group	*M*	*SD*	Effect-size	F	*p*
Cognitive Aptitude	Gifted	4.21	.45	.80	182.20	.001
	Non-gifted	2.87	.56			
Creative Arts Aptitude	Gifted	3.67	.47	.64	75.64	.001
	Non-gifted	2.86	.49			
Emotional Aptitude	Gifted	3.61	.79	.30	10.24	.002
	Non-gifted	3.17	.62			
Leadership Aptitude	Gifted	3.79	.72	.47	31.02	.001
	Non-gifted	3.09	.57			
Language Arts Aptitude	Gifted	4.01	.62	.68	92.17	.001
	Non-gifted	2.88	.59			
Math Aptitude	Gifted	4.14	.57	.76	148.54	.001
	Non-gifted	2.86	.51			
Reading Aptitude	Gifted	4.17	.54	.71	110.43	.001
	Non-gifted	3.01	.60			
Science Aptitude	Gifted	4.10	.58	.75	138.89	.001
	Non-gifted	2.85	.51			

Table 6

Discriminant Validity of the UNIT – GSS

		UNIT – GSS Predicted Group Membership		Total
		Gifted	Non-gifted	
Previously Identified Group	Gifted	49	4	53
	Non-gifted	1	52	53
Percentage	Gifted	92.5	7.5	100.0
	Non-gifted	1.9	98.1	100.0

Note. 95.3% of original grouped students correctly classified.

VITA

Rebecca Grace Gray was born in Morristown, Tennessee. She attended school in Hamblen County, Tennessee and graduated from Morristown-Hamblen East High School in 1990. She graduated from Walters State Community College in 1992 where she received an Associate of Science degree. In 1994, she graduated with a Bachelor of Arts degree from Carson-Newman College. She returned to Carson-Newman College and earned a Master of Education degree in School Counseling in December, 1997. In January, 1998, she began work as an elementary school counselor in Anderson County Schools, Tennessee, serving two elementary schools. In 2003, she resigned in order to pursue the Doctor of Philosophy degree majoring in Education with a concentration in School Psychology. She completed an internship with the Tennessee Internship Consortium in Psychology serving Lenoir City Schools from 2006 to 2007. The Doctor of Philosophy degree was received in August, 2007. She is presently working as a School Psychologist in Knox County Schools and licensed by the State of Tennessee.

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06/11/08 VA
Group