Running Head: IDENTIFICATION OF YOUNG, GIFTED CHILDREN

Identification of young, gifted children: An analysis of instruments and recommendations for practice

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Abstract

Selecting instruments to identify gifted students is difficult and problematic, especially when it comes to young, gifted children as they are growing fast physically and cognitively, making identification even more challenging. Although some states require that local school districts have a plan for identifying gifted children early, there are no Federal legislative mandates that actual educational services be provided. This leaves young, gifted children unlikely to receive gifted education services in their preschool or kindergarten years. This paper focuses on two types of identification instruments - standardized tests and teacher rating scales, with a detailed analysis of characteristics of existing instruments, a summary of their strengths and weaknesses, and suggestions for their use. Findings from the analysis are discussed with implications for practices.

Gifted individuals are regarded as a minority group (Sternberg, 1996), and young, gifted children can be as underserved as any other minority. Although giftedness in young children is less well investigated and defined compared with older children, it is widely agreed that early recognition and intervention of gifted children is crucial (Pfeiffer & Petscher, 2008; Robinson, 1993a; Rotigel, 2003; Sankar-DeLeeuw, 2004). Early recognition and service are important to help children learn during their primary years (Wortham, 2008), and to prevent boredom and the development of negative attitudes toward school, both detrimental outcomes that can occur when children lack quality school experience in their early years in school (Gridley, 1987; Puckett & Black, 2008). Further, children from low-income and minority families, who are often unidentified at an early age, are less likely to be recognized later (Moon & Brighton, 2008). Thus, educators need to be aware of the characteristics of young gifted children and recognize these children to provide them with optimal intervention and educational opportunities.

Characteristics of Young, Gifted Children

Young, gifted children as described by their parents, usually have broader knowledge and better understanding of concepts when compared to their same-age peers (Sankar-DeLeeuw, 2004). They excel in reading, math or spelling skills, and have excellent memory skills (Gross, 1999; Harrison, 2004; Sankar-DeLeeuw). They prefer to work alone, or they like the company of older children when playing in group (Freeman, 1994; Sankar-DeLeeuw). They are highly observant, curious, humorous, creative, and persistent (Harrison, 2004; Sankar-DeLeeuw).

Young, gifted children are evaluated either by their classroom performance (outstanding intellectual and/or academic ability) or affective style (notice-ability, uniqueness and/or intensity) by primary teachers (Rohrer, 1995). Moon & Brighton (2008) found that teachers described gifted children as having high reasoning skills, broad knowledge, and language proficiency.

Teachers also reported traits that include asynchronous development and emotional immaturity, and they emphasized the need to provide English language support for children learning English as a new language (Lee, 1999; Moon & Brighton, 2008; Sankar-DeLeeuw, 1999).

Although not all gifted children have all of these characteristics, some commonalities exist, including extraordinary ability in certain areas when compared to children of the same age. The earlier their talents are recognized, the more likely it is that these children will receive appropriate educational experiences.

Assessment Instruments

The selection of identification instruments for gifted students is regarded as difficult and problematic by educators who implement gifted programs (Callahan, Lundberg, & Hunsaker, 1993). This process becomes even more difficult when it comes to young, gifted children as they are growing fast physically and cognitively. Services provided to young, gifted children are frequently limited. The *2006-2007 State of the States* report (NAGC, 2007) revealed that only nine states have policies regarding early entrance to kindergarten, and twelve states prohibit this practice. Hence, young, gifted children in most states are unlikely to receive gifted education services in their preschool or kindergarten years.

Young, gifted children do not necessarily display as many characteristics as do older gifted children, because they have had fewer opportunities to learn and display academic achievements (Hodge & Kemp, 2000). As a result, achievement tests are inappropriate for use in identifying young, gifted children. This study focuses on the review of individually- and group-administered standardized tests of intelligence or aptitude, as well as the teacher rating scales suitable for use with young children. Young, gifted children, referred to in this manuscript, include children from ages 4 to 8 years. Children in this age range are usually not required to

take high-stakes tests at school. As a result, it is appropriate to discuss and focus on intelligence and cognitive measures rather than achievement tests.

Individually-Administered Intelligence Tests and Young, Gifted Children

A review of the last 10 years of Mental Measurements Yearbooks indicates an increase in the number of intelligence tests that can be used among young children. Stanford-Binet Intelligence Scales, Fifth Edition (SB5; Roid, 2003), Wechsler Preschool and Primary Scale of Intelligence-Third Edition (WPPSI-III; Wechsler, 2002), Slosson Full-Range Intelligence Test (S-FRIT; Algozzine, Eaves, Mann, & Vance, 1993a), Kaufman Brief Intelligence Test (K-BIT; Kaufman & Kaufman, 1993) and Woodcock-Johnson III Tests of Cognitive Abilities (WJ III COG; Woodcock, McGrew, & Mather, 2001) are all individually-administered tests in evaluating intelligence and/or cognitive abilities and are being used in school districts for identification purposes. These tests are each normed on large sample sizes and each addresses the early years of childhood.

Researchers have different opinions on using these tests for identification purposes. Ruf (2003), for example, supported the use of the SB5 in gifted or high-abilities assessment, suggesting that administering the single set of ability tests to one individual throughout his lifetime can reduce errors of measurement produced by using different instruments. Other strengths addressed in literature include its appealing materials and cognitively appropriate tasks, great reports on the psychometric properties of the test at the preschool age, and comprehensive subtests that help find out children's developmental stages in both verbal and nonverbal domains (Ford & Dahinten, 2005). Bracken and Nagle (2007) also suggested using the SB5 to assess the cognitive abilities of children as young as two years old due to its superior psychometric and qualitative characteristics. However, Minton and Pratt (2006) did not recommend using the SB5

in making identification decisions after studying a group of 37 second through sixth graders from a gifted and talented program. They administered the SB5 and Wechsler Intelligence Scale for Children-Third Edition (WISC-III; Wechsler, 1991) to these high ability students, and found that participants' scores on the SB5 were significantly lower than their scores on WISC-III, and that the SB5 and WISC-III scores produced inconsistent rank order among the participants.

There are some studies on other individually-administered tests with results that cannot lead to decisive conclusions regarding whether these tests should be used for identifying gifted children. Bell, Rucker, and Finch (2002) cautioned against the use of the S-FRIT as a single tool for identification purpose due to its emphasis on measuring verbal ability, which may underestimate the abilities of children from diverse cultural backgrounds. Prewett (1995) compared the K-BIT with the WISC-III using a sample of 50 students ages 6 to 14 years in a urban school district who were referred for psychoeducational evaluation by their teachers for not making adquate academic progress. Results of this study suggested that the K-BIT could only roughly estimate students' performance on the WISC-III; and thus, should not be administered as a single screening test.

Horn (2006) examined the relationships between the WJ III COG, the SB5 and the WJ III COG Brief Intellectual Ability Scale (WJ III COG BIA), the SB5 Abbreviated IQ, and the Kaufman Brief Intelligence Test (K-BIT) by administering the three brief tests to 202 third graders who had taken either the SB5 or WJ III COG earlier. Results of the study revealed that the three shortened instruments could group children accurately when compared to full scale scores, with classification rates ranging from 76.7 to 90.6. The WJ III COG BIA was found to best predict giftedness based on five separate criteria using the two full scale measures of

intelligence. However, this study is limited because of its convenient sample of students who had taken either of the two full scale tests before the study for reasons not indicated.

Despite the validity and reliability in the process of standardization and development, individually-administered tests were found to produce inconsistent results when used to identify young, gifted children. Lack of longitudinal studies in using these tests for guiding educational instruction among gifted students also limits their application in regular school setting. At the same time, tests of this kind are usually expensive and time-consuming when administered to each individual, especially when it always requires a psychologist or well-trained personnel to administer the tests and interpret scores. Further, requirement for verbal abilities in these intelligence tests can put twice-exceptional children, children from culturally diverse background, or those children from low-income families in a disadvantaged position (Puckett & Black, 2008).

Although researchers cannot agree on which intelligence test should be used for screening purpose, many cautioned that no single test should be used for that purpose (Pfeiffer, Petscher, & Jarosewich, 2007; VanTassel-Baska, Johnson, & Avery, 2002), especially among young children (Bracken, 1994; Ford & Dahinten, 2005; Lidz, 2003).

Group-Administered Aptitude Tests and Young, Gifted Children

Tests, referred to in this section, can be administered in groups and measure the cognitive abilities or potential that include critical and abstract thinking skills, reasoning, cognitive processing and creativity. Cognitive Abilities Test, Form 6 (CogAT, Form 6; Lohman & Hagen, 2001) and Otis-Lennon School Ability Test, Seventh Edition (OLSAT; Otis & Lennon, 1996) are two widely used group-administered tests used to measure cognitive abilities (Kubiszyn and Borich, 2007) that can be used with Kindergarten through twelfth grade students.

One of the suggested uses of the CogAT, Form 6 is guiding instructions to meet each individual's cognitive abilities and identifying discrepancies between achievement and ability (Lohman & Hagen, 2001). The Primary Edition of the CogAT, Form 6 is developed for students in kindergarten through second grade, and includes verbal, quantitative and nonverbal subscales. Lohman (2003b) investigated the concurrent validity of the Woodcock-Johnson III (WJ-III; Woodcock et al., 2001) and the CogAT, Form 6 by administering both tests to 178 second, fifth and ninth graders, and he reported a higher correlation between the composite score of the CogAT, Form 6 with the WJ-III General Intellectual Ability cluster (r=.68) than with any other more specific WJ-III clusters which ranged from r= .30 to r=.60. Lohman found that there were highest correlations between the scores of certain levels of the CogAT, Form 6 and the WJ-III clusters that measured similar capabilities. At the Primary level, for example, the CogAT Verbal has the highest correlation with WJ-III Verbal Ability scores (r=.68). And the CogAT Nonverbal score has the highest correlation with the Fluid Reasoning cluster (r=.58).

The Levels A and B of the OLSAT are designed for students in kindergarten and first grade, respectively. Test administrators read instructions aloud to young children taking the test. However, due to its emphasis on test taking skills and verbal ability, OLSAT was not recommended to be used among young children (Cataldo, 2009) or English language learners (Reed, 2007). A search of the ERIC and PsychInfo databases revealed no empirical studies using the latest version of OLSAT. Further research is needed regarding the use of OLSAT to identify young children who are gifted.

Group-administered intelligence or aptitude tests, compared with individually-administered measures, are easier to administer and interpret, and they are less costly. These tests are developed through extensive norming procedures, based on certain theories of intelligence,

and usually demonstrate adequate technical characteristics. However, there are some concerns when administering these tests to young children. First, it takes time and energy for young children to take the tests. For example, it requires six, 30 minute sessions to administer the Primary level of the CogAT, Form 6, and longer sessions for other levels. The OLSAT Level A for kindergarteners takes approximately an hour to administer. Second, other factors exist that may significantly influence the performance of the children when they take a test at the same time, such as noise, environment of the classroom or family changes that children are going through (Smuda, 1998). Third, these tests require verbal proficiency both to understand directions and to take the test. Although oral instructions are suggested when administering primary batteries to young children who often cannot read well, students without adequate English proficiency or the attention span to understand oral instructions still may not be able to perform well even on nonverbal subscales (Brody & Mills, 1997; Cataldo, 2009).

Teacher Rating Scales and Young, Gifted Children

Teacher recommendations are widely adopted by school districts for referring students to gifted programs all around the country (Davis & Rimm, 2003). Previous research has revealed potential problems concerning teacher-nomination of gifted students, including teachers' misconceptions concerning the characteristics of gifted students (Achenbach, 1997) and their bias against culturally diverse students (Kaufman & Harrison, 1986). Inadequate training of teachers may also lead to unreliable referral decisions (Ricovero, 2000). However, with the development more objective rating scales and checklists in recent years, teachers can better provide valuable information concerning gifted behaviors among their students that may not be perceptible by standardized tests (Chan, 2000; Hodge & Cudmore, 1986; Peterson, 1999; Peters, 2009). Some teacher rating scales or checklists that have been used to identify young children

include the Gifted Rating Scales – Preschool/Kindergarten Form (GRS-P; Pfeiffer & Jarosewich, 2003), the Gifted and Talented Evaluation Scale (GATES; Gilliam, Carpenter & Christensen, 1996), the HOPE Scale (Peters & Gentry, 2009) and the Scales for Identifying Gifted Students (SIGS; Ryser & McConnell, 2004). Characteristics of these scales are presented in Table 1.

Table 1. *Characteristics of four rating scales for identifying young, gifted children*

Instrument	*Factors and Reliability Estimates*	*Technical Reports*	*Scale Items*	*Norm Sample*	*Sample Demographics*	*Notes*
Gifted and Talented Evaluation Scale (GATES; Gilliam, Carpenter & Christensen, 1996)	Intellectual ability (.88), academic skills (.84), creativity (.87), leadership (.89), artistic talent (.88)	Content, criterion-related, and construct validity	50 nine-point response items	1,083 students aged 5 through 18 identified as gifted in 1995	32 states and Canada	68 out of 250 teachers returned checklists; test-retest reliability lower (r=.70 *to* .87) rating GT students than those with handicaps (r=.93 to .98)
Gifted Rating Scales – Preschool/Kindergarten Form (GRS-P; Pfeiffer & Jarosewich, 2003)	Intellectual ability, academic ability, creativity, artistic talent, motivation (r ranges .97 to .99)	Convergent and divergent validity	Total of 60 items with 12 items for each domain on a nine-point scale	375 students ages 4 through 6 yrs 11 months	About 78% Caucasian (62% Caucasian in national population 2000 census)	Caution for use among minority groups
HOPE Scale (Peters & Gentry, 2009)	Social and academic abilities	Rigorous model fit procedures including EFA, CFA, MCFA, and invariance analyses on gender, race, and income	13 items in original version; Eight social and nine academic items in revised version; Five social and six academic items after analyses	500 random samples out of 7,000 K-5 students in original scale; 1,700 K-5 students rated by 71 teachers with revised scale	Diverse ethnic groups, local norm sample in Indiana	Identifying students from low-income families and minority backgrounds
Scales for Identifying Gifted Students (SIGS; Ryser & McConnell, 2004)	General intellectual ability, language arts, mathematics, science, social studies, creativity, leadership (r average above .90)	Convergent, discriminant, item functioning, and predictive validity	Total of 84 items with 12 items for each domain on a five-point scale	921 in General norm sample, 1,055 in Gifted norm sample ages 5 through 18	Race presented as White, African American, or other. 2% in General sample as "other"; 4.7% in Gifted sample	Incomplete test-retest reliability report; Low interrater reliability; Small sample size for validity tests

The GATES (Gilliam et al., 1996) was normed on 1,083 gifted and talented children. Demographic characteristics of the norming sample were compared with those of the nation, but information of age groups, socioeconomic status or gender was not compared between the two. In addition, criteria for selecting gifted and talented students into the norming sample were not reported. As a result, use of the scale for identification purpose may not be appropriate considering the students being observed are likely to be a heterogeneous group. Although authors of the GATES cautioned against the use of this scale as a single measurement in identifying gifted students, further detail concerning to what extent test administrators should use the score as a criterion was not provided. For example, the guidelines for interpretation of test results divide the scores into six categories, indicating the probability of a student's being gifted or not, but there is no instruction on whether examiners should put "borderline" and above or "probable" and above students into gifted programs.

The SIGS (Ryser & McConnell, 2004) has two forms: School Rating Scales (SRS) and Home Rating Scales (HRS), both of which are for use among students ages five through 18, and are advised to be completed by different people who know the student well in school and at home, respectively. Though instructions differ slightly, the content on both forms is identical. The manual, however, does not explain the reason of using identical content on different forms. And this may produce large variation among scorers, since individual nominators may vary in their interpretation of criteria (Pfeiffer & Blei, 2008; Reis & McCoach, 2000).

The GRS-P (Pfeiffer & Jarosewich, 2003) was developed for assisting in the identification of gifted and talented preschool or kindergarten children, and has five domains including intellectual ability, academic ability, creativity, artistic talent, and motivation. The normative sample included 188 boys and 187 girls ages four years to six years eleven months. Its

standardization was co-linked with the standardization of the new Wechsler Preschool and Primary Scale of Intelligence-Third Edition (WPPSI-III). The authors claimed that the GRS-P is very effective in identifying intellectual giftedness (Pfeiffer & Petscher, 2008). Results of standardization study provided support for the internal structure of the scale with no age differences across age span four years to six years and eleven months (Pfeiffer, Petscher, & Jarosewich, 2007). However, Pfeiffer et al. (2007) found gender differences on the artistic talent scale, and scores of Asian Americans were the highest among all ethnic groups with 1.5 scale-score points higher than Whites and Native Americans, and seven points higher than African Americans and Hispanics. Although the authors followed rigorous procedures and standards when developing the instrument, further studies are needed to investigate how the GRS-P works with children from low-income families or minority backgrounds.

HOPE Scale (Peters & Gentry, 2009) was developed as part of Project HOPE (Having Opportunities Promotes Excellence), a three-year project funded by the Jack Kent Cooke Foundation for students from low-income background in the state of Indiana to have enriched educational experiences. It has been tested and standardized on a large sample (n=8,700) of K-5 students in the Midwest. The reliability and validity tests of the HOPE Scale suggested strong cross-group equivalence when used by teachers to rate students from diverse income and cultural backgrounds on the Academic and Social components of giftedness and talent. The HOPE Scale, though yielded to further research due to its regional sample, holds promise for identifying gifted children from low-income families and minority backgrounds.

Lack of representative standardization samples affects the usefulness of the instruments in specific settings (Plata, Masten, & Trusty, 1999; Peters, 2009). In other words, some rating scales may be effective when used in schools that have students with similar demographic

characteristics as those in the normative sample, but ineffective when used in a setting in which the demographics differ from the normative group. Jarosewich, Pfeiffer, & Morris (2002), in a review of three widely used teacher rating scales that include Gifted and Talented Evaluation Scales (GATES; Gilliam et al., 1996); Gifted Evaluation Scales, Second Edition (GES-2; McCarney & Anderson, 1989); Scales for Rating the Behavioral Characteristics of Superior Students (SRBSS; Renzulli, Smith, White, Callahan, Hartman, & Westberg, 1997), raised concerns in using these instruments as a primary identification approach. Jarosewich et al. (2002) identified the nonrepresentative normative samples of the GATES and the GES-2, and the lack of standard scores in SRBCSS. In addition, these tests did not provide sufficient inter-rater reliability evidence, or adequate evidence for predictive accuracy. As a result, Jarosewich et al. (2002) suggested using these instruments with extreme caution and recommended understanding the usefulness and weaknesses of rating scales before using them in identifying gifted students for available school programs.

Despite some weakness of teacher ratings, teachers are regarded very important in the process of identifying gifted students. Gentry & Mann (2008) suggested that teachers who know their students well can identify students who do not perform well on tests. Teachers who are culturally aware and sensitive can also be very good evaluators of students from low-income families and/or diverse backgrounds (Hunsaker, Finley, & Frank, 1997; Peters, 2009; Peterson, 1999). According to the *2006-2007 State of the States* report (NAGC, 2007), 30 out of 43 responding states reported using teacher or parent referral as the first step in an identification procedure. This result indicates that an adult who is familiar with the students remains to be a "gatekeeper" for the gifted and talented programs (Peters, 2009).

Nonverbal Intelligence Instruments and Young, Gifted Children

Nonverbal tests are regarded as tests that minimize or even eliminate the need for test takers to use languages during the process of processing and answering test items (Braden & Athanasiou, 2005). The underrepresentation of students from some ethnic backgrounds, such as Hispanic and African American students, in gifted education (Yoon & Gentry, 2009) has led to the increased use of nonverbal tests of intelligence (Peters, 2009), especially because this group of students usually achieves lower scores when administered traditional individual- or group-administered intelligence tests (Lohman, 2006). However, the assumption that nonverbal measures provide equal opportunities for students with different cultural backgrounds (Naglieri & Ford, 2005) cannot be justified due to the fact that little is known about whether students from different language backgrounds will perform differently on nonverbal tests of intelligence (Braden & Athanasiou, 2005). This point is reinforced by Yoon & Gentry's recent study (2009), in which they found overrepresentation among Asian and underrepresentation of other ethnic groups such as American Indian or Alaska Native, Hispanic, and African American in gifted education across the country from 2002 to 2006.

Braden & Athanasiou (2005) posited that it remains unclear what processes nonverbal tests measure in a review of seven widely used nonverbal intelligence tests, including the Comprehensive Test of Nonverbal Intelligence (Hammill, Pearson, & Wiederholt, 1997), the General Ability Measure for Adults (Naglieri & Bardos, 1997), the Leiter International Performance Scale-Revised (Roid & Miller, 1997), the Naglieri Nonverbal Ability Test-Individual Administration (Naglieri, 2003), the Nonverbal Scale of the SB5 (Roid, 2003), the Test of Nonverbal Intelligence-Third Edition (Brown, Sherbenou, & Johnsen, 1997), and the Universal Nonverbal Intelligence Test (Bracken & McCallum, 1998). The basic question remains: Do nonverbal tests measure intelligence nonverbally, or nonverbal intelligence?

Although authors of nonverbal measures such as the Naglieri Nonverbal Ability Test (NNAT; Naglieri, 1997) claim their tests measure general intelligence, Braden and Athanasiou questioned this statement on the basis that previous research suggested different nonverbal processing characteristics among at least some individuals. Researchers suggested using nonverbal measures cautiously, and only as a complementary instrument in identifying gifted students (Braden & Athanasiou, 2005; Lohman, 2005a; VanTassel-Baska, 2008). Unfortunately, search of the ERIC, PsycInfo with the key words of "gifted, young, children, nonverbal" did not generate related research on the use of nonverbal tests among young children for identification purposes.

Implications for Practice

To identify young, gifted children using any instrument, comparisons should be made among children who are from similar backgrounds by using tests with similar normative samples. These tests, instruments, scales, and checklists should have evidence of rigorous psychometric evaluation concerning their ability to measure what the purport to measure and to yield valid and reliable results. Lohman (2006) suggested using local norms and comparing students with similar learning opportunities, cultural, or socioeconomic backgrounds even when they have to take the same test. For example, it is more appropriate to compare a five-year-old Hispanic child from a low-income family to children with similar backgrounds than to a national sample that includes more Caucasian children. Peters (2009) reinforced this principle by suggesting the use of HOPE Scale to make within group comparisons on students from low-income, non low-income or minority groups.

The second implication evident from this review is that educators should realize the limitations of each assessment measure and use multiple measures (Lohman & Korb, 2006) in their efforts to identify young children as gifted. Furthermore, in using multiple measures, the

measures should be considered separately, not cumulatively with any high score considered as a potential score for inclusion, rather than requiring multiple high scores on multiple instruments. By viewing identification data in this manner, including and nurturing the needs of young, gifted children can be inclusive rather than exclusive, and thereby address the needs and potentials of students from frequently underrepresented groups. Those who choose the test should read test reviews on its intended use, standardization process, technical data, and more importantly, its limitations. Only after learning about the test or instrument and its strength and limitations, can the user effectively interpret and put to use the results from the test.

The most recent definition of *gifted and talented* provided by the U.S. Department of Education (1993) follows:

> Children and youth with outstanding talent perform or show the potential for performing at remarkably high levels of accomplishment when compared with others of their age, experience, or environment. These children and youth exhibit high performance capability in intellectual, creative, and/or artistic areas, possess an unusual leadership capacity, or excel in specific academic fields. They require services or activities not ordinarily provided by the schools. Outstanding talents are present in children and youth from all cultural groups, across all economic strata, and in all areas of human endeavor. (p. 26)

Although the definition may provide only basic criteria in identifying gifted and talented students, it delivers the information of different characteristics gifted students can display, and the diverse and special needs they may have in school. It also acknowledges the importance of comparisons with similar others and that gifted children exist in all cultural and economic groups and in many areas of human activity. The identification of gifted children is a crucial component for

programming, and this process should include a holistic and flexible approach, as suggested by researchers (Gentry & Mann , 2008; Gentry & Owen, 1999; Renzulli, 2005). To reduce errors resulting from multiple assessments, Lohman & Korb (2006) suggested combining the information from multiple measures by averaging scores in similar domains. Gentry & Mann (2008) recommended a dynamic evaluation process, in which students are evaluated regularly regarding their ability and academic performance. They also suggest including both high ability (as measured by test scores) and high achieving (as measured by classroom performance) students in gifted programs to give students with high potential the opportunity to emerge and show their talents.

Budget concern and lack of state mandates for early identification often leave young, gifted children un-identified and underserved. Although in recent years the number of measures for identifying young has increased, much work remains to address effective programming and services for this population. Evaluating students' abilities and performance using tests or rating scales provides educators with data that help them effectively plan appropriately challenging curriculum and instruction to ensure on-going cognitive development and learning.

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