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Challenges in the identification of giftedness: Issues related to psychological assessment

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Título: Retos en la Identificación de los Alumnos Superdotados: Cuestiones relacionadas con la Evaluación Psicológica.
Resumen: Este artículo analiza los temas relacionados con la identificación de los estudiantes superdotados y recoge algunas recomendaciones específicas sobre medidas educativas, con el fin de responder a la diversidad de estos estudiantes. Se plantean las dificultades más comunes relacionadas con la evaluación psicológica de estos estudiantes, entre ellas la falta de instrumentos adecuados para la evaluación de las múltiples dimensiones de la superdotación y el talento, así como, la falta de formación que tienen los profesionales para esta identificación.
Con respecto a estas dificultades, se describen algunos procedimientos de evaluación con el fin de asegurar mayores niveles de objetividad y validez de los datos, lo que reduce la posibilidad de falsos positivos y falsos negativos en la identificación de estos estudiantes. Además de las pruebas psicológicas, se presentan las ventajas del uso de diferentes fuentes de información y la contribución de los distintos profesionales y padres para esta evaluación. Por otro lado, es importante llevar a cabo la evaluación de los estudiantes superdotados por fases, incluyendo una fase de evaluación inicial (screening), seguida de la fase de diagnóstico o identificación; y la fase final, orientada a atender a la diversidad de estos estudiantes. Por último, se presentan algunas sugerencias para el avance en la identificación y evaluación de la superdotación, como un medio para apoyar el desarrollo de la investigación en este área.
Palabras clave: superdotación, altas habilidades, talentos, evaluación, identificación.

Abstract: This paper discusses issues related to the assessment of children and youth for the identification of giftedness, and presents specific recommendations for educational measures in order to attend to the particular characteristics and needs of these students. We outline the most common difficulties related to the psychological assessment of these children, including the lack of adequate instruments for the assessment of the multiple dimensions of giftedness, as well as the shortage of training for this identification.
Regarding these difficulties, we describe some assessment procedures that assure higher levels of objectivity and validity in data, reducing the possibility of false positives and false negatives in the identification of these students. In addition to psychological tests, we present the advantages of using multiple informants and the contribution of different professionals and parents for this assessment. On the other hand, as we present giftedness as a result of a developmental process, it is important to conduct students' assessment in phases, including an initial screening phase, followed by the sound assessment of students and nurturing. Finally, we present some suggestions for the advancement in giftedness identification and assessment, as a means to support the development of research in this area.
Key words: Giftedness, high abilities, talents, assessment, identification.

Introduction

The identification of gifted children and youth, also known as students with high abilities or talented students, is a major issue for the provision of adequate educational support and therefore for inclusion (Huang, 2008; Renzulli, 2013). The early identification of these students is often a responsibility of the family and the school, which justifies the particular attention that should be given to assessment strategies that support such an identification. It is important to avoid Type I and Type II errors in the identification of these students: in the first case, the identification as gifted of students who are not (false positive), and in the second not identifying students who are indeed gifted (false negative) (Garcia-Santos, Almeida, & Cruz, 2012).

Research in this domain (Moon, 2003) suggests that psychological assessment in the domain of giftedness is important for three main reasons: (i) the identification of gifted children based on psychological characteristics, (ii) the diagnosis of strong and weak features in terms of students' development, in order to implement specific educational measures, and (iii) the assessment of educational measures efficiency. This assessment has been enriched due to progresses in research, as currently it is widely acknowledged that, although necessary, intelligence is not sufficient to explain giftedness. Therefore, due to the multidimensionality of giftedness, it is inadequate to limit the identification of gifted students to high scores in IQ tests and, therefore, necessary to include a diversity of psychological dimensions and its combination in this identification (Chart, Grigorenko, & Sternberg, 2008; Gagné, 2004; Renzulli, 2005; Sternberg, 2001). The convergence of these factors in high ability is frequently dynamic and systemic, and goes beyond singular psychological attributes. Giftedness emerges, as well, from educational contexts that favor the development of talents or high performances (Gagné, 2004, 2007; Shavinina, 2013; Sternberg, 1999, 2001; Subotnik, Olszewski-Kubilius, & Worrell, 2011). Difficulties in identification increase when psychological assessment is conducted in early ages, namely as a response to the curiosity of parents or educators. Sometimes, cognitive precocity at 3 or 4 years may not be as evident later in children's lives, due to the nature of psychological development or the impact of transitioning to formal education, and resulting in the dissipation of the previously developmental advantage at age 8 or 10. As we can easily observe, a diagnosis of giftedness is more difficult in childhood when psychological development is more unstable (Heller, 2004). Some authors even suggest that a diagnosis of giftedness is only sufficiently reliable at 12-13 years, due to the

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neurological maturation of cognitive abilities (Castelló, 2005).

In this paper, we present some of the difficulties that are most frequently found in psychological assessment for the identification and characterization of gifted children, and describe some assessment procedures that may reduce those difficulties. In particular, we suggest that assessment must include information collected with parents and teachers, as well as indicators of children's achievement in various contexts, and not just solely scores on psychological tests.

Difficulties in the psychological assessment for the identification of giftedness

Assessing for the identification of gifted children is challenging, first and foremost, due to the complexity of the phenomenon and the difficulty in clearly defining giftedness. The multidimensionality of the concept suggests that, although necessary, intelligence is not sufficient to explain giftedness. Psychological assessment must, therefore, include other psychological dimensions and consider the impact of contexts in its development (Gagné, 2015). The need to consider other dimensions other than intelligence in the assessment of giftedness is particularly justified in cases where lack of motivation to answer an assessment test inhibits the demonstration of high ability (Galbraith & Delisle, 1996; Prieto, Ferándiz, Ferrando, & Bermejo, 2015; Renzulli & Reis, 1997; Treffinger & Renzulli, 1986).

In the past years, definitions of giftedness have moved beyond high scores in IQ tests (Chart, Grigorenko, & Sternberg, 2008; Schwartz, 1994; Sternberg, 2001). Gifted students present, along with above-average levels of abstract reasoning, an advanced array of vocabulary, good reading skills, high levels of information, a strong motivational involvement, cognitive flexibility, independent and self-regulated work or a personality that is open to experience. In the three ring theory, Renzulli (1986) suggests that giftedness is a result of the confluence of high ability, motivation, and creativity, and therefore assessment measures must include elements of these three dimensions. Recently, this author discusses the possibility of creative-productive giftedness versus one that is academic-analytic, suggesting that creativity is not always present in all forms of giftedness or talent (Renzulli, 2005).

Another aspect is related to the singularity of the phenomenon of giftedness and to the fact that it is not constrained to a score on a test. Psychological assessment tests were constructed and validated for the general population and not always are capable of capturing high levels of gifted students' ability, and even less their singularity. For example, the available intelligence tests lack sensibility to higher levels of achievement, due to ceiling effects. Many times, children's knowledge or ability goes beyond the limits of the test. In these cases, tests do not provide adequate measures of children's ability (Garcia-Santos et al., 2012). On the other hand, some authors have found that the widely known Wechsler Intelligence Scale for Children (WISC-IV), which is used for the identification of gifted children (McLain & Pfeiffer, 2012), presents some specificities in the factor structure when used in samples of gifted students (Rimm, 2010; Volker & Smerbeck, 2009). Therefore, along with the measurement of "how much intelligence a child has", it is also important to obtain a qualitative assessment of gifted children's abilities and cognitive functioning (Arx, Meyer, & Grob, 2008; Garcia-Santos, Almeida, & Cruz, 2012; Sternberg, 1998, 2001). Giftedness, as high ability, results in an individual system of processing and organizing information, and planning and solving problems. Such particularities in cognitive functioning present a challenge to teachers, who will necessarily have to plan differentiated educational practices in the classroom in order to promote students' inclusion and attend to their special education needs (Guisande, Almeida, Páramo, & Ponte, 2005).

Psychological assessment procedures, as in educational measures, should also attend to gifted students' singularities in cognitive ability, functioning, and learning. This is applicable to the assessment of basic cognitive functions (attention, perception, working memory), higher-order cognitive processes (concept formation, reasoning, problem solving, cognitive styles, metacognition), and their impact on learning (language, complex ideas manipulation, facility of apprehending ideas, curiosity, and motivation to learn). Attending to this diversity of particular features in giftedness results in including the assessment of other aspects such as motivation (e.g., intrinsic motivation, perfectionism) and personality (e.g., self-determination, conscientiousness, openness to experience), which impact learning results. The emergence of Positive Psychology in the past decades has resulted in the acknowledgement of the importance of assessing optimum achievement, as a result of the combination of a complex array of personal and environmental resources (Sternberg, 2001, 2015).

Finally, a new difficulty is related to the lack of preparation of the professionals that are implicated in the assessment and education of students with characteristics of giftedness. According to Pfeiffer (2013), the best assessment practices of the most capable students are associated to three factors: (i) familiarity with research and alternative tests for the assessment of high abilities; (ii) competence in the application of tests and interpretation of results; and (iii) knowledge in the area of giftedness in general. However, the topic of giftedness is not sufficiently integrated in the initial and continuing training of psychologists, teachers and other professionals that may contribute to this assessment. Research suggests, for example, that the quality of teachers' assessment in the identification of these students is more dependent of their training experience, and that there are improvements in teachers' assessment precision after their participation in workshops and when they use validated instruments in this assessment (Davis, Rimm, & Siegle, 2011; Feldhusen & Jarwan, 1993). Therefore, the specific training

of psychologists and other educational agents involved in the identification of giftedness is a major issue in the advancement of gifted students' assessment. For example, some authors suggest that gifted girls deserve particular attention because they tend to be less identified than their male counterparts (Heller, 2004; Phelps, 2009; Van Tassel-Baska, Feng, & Evans, 2007), and therefore may gradually avoid a deep engagement in academic tasks, if it results in higher levels of social integration in adolescence (Kerr, 1997; Silverman, 1993). On the other side, *gifted underachievers* or gifted students with learning difficulties/disabilities (dual-exceptionality) tend to be neglected by teachers, who do not acknowledge these situations as compatible with giftedness (Al-Hroub, 2013; Ruban & Reis, 2005).

Procedures for the advancement of psychological assessment in giftedness

The challenges related to the definition and identification of giftedness result in difficulties and disagreement concerning the psychological assessment of giftedness. Heller (2004) suggests that this controversy is observed in four main topics: (i) variables included in this diagnosis (what to assess), (ii) why to assess (aims), (iii) with which methods and instruments should we make this assessment (informants), and (iv) when to assess (phases in the development). Concerning the variables to assess, in the psychometric paradigm the emphasis is placed on the identification of potentials or internal capacities, while in the paradigm of the expert-novice relevance is placed on the characteristics of personality, motivation, and the sociocultural conditions that set the basis for development and achievement; however, various authors suggest the complementarity of paradigms in the assessment of gifted students (Gagné, 2009; Heller, Perleth, & Lim, 2005; Renzulli & Gaesser, 2015; Sternberg, 2003; Ziegler & Heller, 2000). Focusing on the superior capacity of these students, it is important to look beyond the cognitive dimensions that are considered in the assessment, not confining giftedness to high scores in IQ tests (Chart et al., 2008; Almeida & Oliveira, 2000; Naglieri & Kaufman, 2001; Pereira, Gaspar, Simões, & Lopes, 2006; Pereira, Seabra-Santos, & Simões, 2003; Robinson & Harrison, 2005). In the specific case of giftedness, equally important factors, although difficult to assess, are the child's curiosity, cognitive flexibility, and creativity (Morais, 2003; Prieto, López-Martinez, & Ferrándiz, 2003). Contrary to intelligence tests, which typically measure convergent thinking, creativity tests include the assessment of fluency, flexibility, originality, and elaboration of ideas and productions, that although not as valued in school and academic records, tend to be less influenced by students' academic learning (Russo, 2004). Similarly, it is important to include in the description of these students' cognitive abilities factors such as cognitive styles, executive functions, self-regulation and metacognitive skills (Guisande et al., 2005; Sternberg, 1998, 2001). On the other hand, since giftedness is not strictly confined to cognitive psychological variables, assessment should also consider other variables related to motivation and personality (e.g., persistence, perfectionism, self-concept, anxiety management, risk-taking and openness to experience). As Nisbett et al. (2012) have stated, "measuring nonanalytic aspects of intelligence could significantly improve the predictive power of intelligence tests" (p. 131). The correct identification of giftedness requires a multidimensional and multimethod psychological assessment (Davis et al., 2011; Gallagher, 2008; Jarosewich, Pfeiffer, & Morris, 2002; Pfeiffer & Blei, 2008).

In what concerns the purposes, assessment should be aimed at attending to the specific needs and characteristics of children with high abilities. Very frequently, gifted children fail to achieve excellence in adulthood due to lack of adequate support (Simonton, 2009), which is a loss for the individual and for society, in general (Renzulli, 2005; Shavinina, 2009). The process of identifying these students is therefore intrinsically related to the type of educational responses and measures that are implemented in schools. Since there is not a single standard for intervention for these students, due to the specificity of children's characteristics, assessment should inform or assist decision-making regarding the type of educational support to activate for each student (Renzulli & Gaesser, 2015). As assessment is associated with support measures, once again the inclusion of parents and teachers in this process is highly beneficial (Hanny, 1993). Technical evaluations and orientations, particularly those provided by psychologists, are more valid if based on relevant information obtained from parents and teachers. Many times teachers provide a critical perspective, even a more pessimistic one, about these students, namely regarding their psychological development or describing students' ability as the reflection of parents' pressure or ambition (Sankar-DeLeeuw, 1999).

With regard to information sources, the developmental nature of giftedness advises for an assessment carried out by different agents, prepared for this purpose, and including various learning and development contexts of these students. Therefore, this assessment requires input from parents, educators and teachers, in addition to the information provided by experts, namely psychologists (Van Tassel-Baska et al., 2007). According to Renzulli (1986), giftedness occurs in certain circumstances and at particular times, as well as in specific areas of learning and performance. A proper assessment must attend to these specificities, so that educational measures meet the individuality of each case (Ziegler & Phillipson, 2012).

It is important to note that the reliability of assessment increases with the involvement of other agents and sources of information (Almeida, Simões, Viana, & Pereira, 1996; Renzulli & Gaesser, 2015). In the early years, parents play an important role because they have relevant information about the behavior of the child, particularly in critical developmental moments (DeVries, 2009; Schader, 2009). Progressively, at later ages, the identification process should be extended to

other contexts and developmental moments, resorting to different agents, procedures and formal and informal assessment tools (Almeida & Oliveira, 2000; Candeias et al., 2003; Melo, 2003; Renzulli & Gaesser, 2015; Van Tassel-Baska et al., 2007). It is especially important to avoid distortions caused by certain stereotypes or lack of professional's training, and to pay particular attention to specific subgroups of children, including girls in science domains, children from socio-economically disadvantaged families, students with behavioral problems or *gifted under achievers,* as these children's high ability tends to be less identified and recognized by the close environments (Heller, 2004).

In order to decrease the costs and difficulties related to assessment, the process of identification should be accomplished in several stages (Heller, 2004): an initial screening phase, which can be applied to all students in the school; a phase of further diagnosis (identification phase, characterization and suggestions to attend to children's needs) addressed to 20 to 25% of students flagged in the screening phase and which can identify 5 % of the children that warrant further individualized assessment (interviews, individual tests); and a final phase of intervention (nurturing), addressed to 2-5% of the children who are object of special education measures, and where the impact of intervention measures is evaluated.

The screening phase relies mainly on collective cognitive tests and scales that can be reported by teachers and parents, or even by the student and peers. This initial phase of identification includes not only psychological tests, but also school indicators of academic performance (Bracken & Brown, 2006). Teachers are also invited to answer scales that assess students' skills and behaviors, as well as to identify those that in the classroom present high performance levels, and therefore would benefit from further assessment with specific cognitive development and learning tests (Alencar & Fleith, 2001; Almeida, Oliveira, & Melo, 2000; Veiga & Marques, 2001). In this topic, a special mention must be made to the *Scales for Rating the Behavioral Characteristics of Superior Students* (Renzulli, Smith, White, Callahan, & Hartman, 1976), which have been systematically revised throughout the years (cf. Jarosewich et al., 2002).

With the flagged students, follows a new stage of psychological assessment. Assessment is now aimed at confirming the diagnosis of giftedness and describe the student's psychological profile, with the concern of guiding educational interventions. At this stage, the identification of gifted students is safer when it brings together a team of professionals from various fields, such as teachers and psychologists, seeking to define the profile of the student and program the intervention measures to be adopted (Miranda & Almeida, 2003).

Several assessment tools are available for the diagnosis of giftedness. Among these tools are psychological tests, standardized academic tests based on the school curriculum, rating scales for parents and teachers, the evaluation of short essays and other productions from the child, creativity tests, self-assessment scales, observation grids, questionnaires or school grades. In the cognitive domain it is important to overcome the limitations of IQ tests, by including more descriptive measures of cognitive functions (Naglieri & Kaufman, 2001) or covering various forms of intelligence, particularly the most practical and creative skills which are less present in such tests (Gagné & Guenther, 2010; Gardner, 2003; Renzulli & Gaesser, 2015), or the factors that are not apprehended by intelligence tests (Al-Hroud, 2013; Gardner, Kornhaber, & Wake, 1998; Renzulli & Reis, 2000; Sternberg & Zhang, 2004). Emotional and social intelligence tests, today more popularized, could also have an important role in illustrating cognitive functioning, and explaining higher achievement levels. Attending to this complexity of cognitive functioning, according to Pfeiffer (2015) high abilities can be seen as a high potential to become excellent. In this case, students do not always perform well in intelligence or school tests, but have a higher capacity at certain times and in certain tasks that make us believe in their high potential to become particularly gifted. Consequently, evaluation should be multi-criteria (Renzulli & Gaesser, 2015), including a variety of psychological traits and assuming cognitive assessment through a greater diversity of instruments or performing contexts.

Final considerations

Despite criticism, intelligence tests continue to be recognized as a privileged and recommended means to identify gifted children (Lubinski, 2004; Pereira et al., 2003; Pfeiffer, 2015; Silverman, 2009). Intelligence tests include the *Wechsler Intelligence Scale for Children* (WISC), from 1949 and following revised editions (the most recent is the WISC-V; Wechsler, 2014), the *Stanford-Binet Intelligence Scale*, developed in 1916 and progressively revised (for example, the SB-5; Roid, 2003), the Kaufman battery for children (KABC-2; Kaufman & Kaufman, 2004) or the Woodcock-Johnson Cognitive Abilities (WJ-IV; Schrank, McGrew, & Mather, 2014), which are both less used (Pereira et al., 2003). In this set of tests, the criterion for giftedness is usually set for two standard deviations above the mean (Sattler, 1992). However, the threshold for gifted classification is variable and many authors advise not to set very high cut-off points in order to not exclude some potentially gifted students (also known as false negatives) (Heller, 2004; Pereira et al., 2003). This may be more frequent among children from disadvantaged sociocultural backgrounds, normally with less academic and language skills to perform well in available intelligence tests. Incidentally, some authors advise against the exclusive use of intelligence tests (Naglieri & Kaufman, 2001; Pereira et al., 2003; Russo, 2004), due to the cultural and academic saturation of these tests, which also do not value creativity and various forms of intelligence, or because they include a time limitation, which may decrease more reflexive gifted students' achievement (Rimm, 2010; Silverman, 2009).

Due to the challenges related to an assessment focused on intelligence tests, we suggest to address the following is-

sues when identifying gifted students, from special populations: (i) use multiple assessment procedures and different sources; (ii) include cultural and linguistic appropriate tools; and (iii) use an approach based on case studies, in which a variety of data is interpreted and analyzed by a qualified team, taking into account the context in which each student is included in the decision-making process regarding admission or not for specific support programs. The literature points to the need to use multiple criteria, to collect a variety of information that allows objective and subjective evaluations, and to adopt an alternative assessment strategy with subgroups, overcoming the established criteria from the early screening moments (Alencar & Fleith, 2001; Van Tassel-Baska et al., 2007). In addition, the reliability of assessments is increased by using multiple instruments (Pfeiffer, 2015), including students' school work, the standardized tests, teachers' records, and students' self-assessment inventories (Van Tassel-Baska et al., 2007).

The participation of parents and teachers in the assessment of giftedness is internationally assumed (DeVries, 2009). The more this assessment occurs at early ages, the more parents are important. Parents have a particular ability to identify facets of giftedness, such as creativity, high concentration in an area of interest, curiosity, early reading ability, persistence, vocabulary fluency and high content knowledge, extraordinary sense of humor, unusual ability to establish abstract relationships in learning, or accurate perception (Sankar-DeLeeuw, 1999; Schader, 2009). In school-aged children, learning behaviors and academic results are indisputable elements for assessment (Almeida, Oliveira, Silva, & Oliveira, 2000; Van Tassel-Baska et al., 2007), even if these results are influenced by the student's sociocultural background and adaptive behaviors in the classroom (Davis et al., 2011; Kuo, Maker, Su, & Hu, 2010; Rizza & Morrison, 2003).

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