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# Programs and Practices for Identifying and Nurturing High Intellectual Abilities in Spain

Sylvia Sastre-Riba, PhD<sup>1</sup>, Luz F. Pérez-Sánchez, PhD<sup>2</sup>, and Angeles Bueno Villaverde, PhD<sup>3</sup>

**Abstract:** The recent educational legislation in Spain shows a great interest in enhancing the talents of all citizens. Different models of identification and intervention for students with high intellectual abilities (HIAs) coexist. The assessment model based on intelligence is still in force in the psychoeducational guidance field; however, from the research, other multidimensional and developmental models are prevalent, rethinking the nature of giftedness and talent, as well as identification and educational practices. These models consider HIA as potential in development, depending on the interrelation among neurobiological bases, personal, and environmental conditions. Efforts are being made to detect high-ability students. The most common intervention measures are the school enrichment of the curriculum, curricular adaptations, and acceleration. Several universities and some autonomous communities (i.e., school districts in the states) have organized extracurricular enrichment programs, some for longer than 10 years. The training of specialized teachers in high abilities has substantially increased, both in the Ministry of Education and autonomous local communities. Universities have also included some subjects in their programs related to this issue of gifted education with specific training designed in postgraduate courses. The research agendas of HIAs currently focus on studying metric approximation, identification and profiles, cognitive functioning and creativity, management of

cognitive resources, socioemotional characteristics, gender, enrichment programs, and their effectiveness.

**Keywords:** high intellectual abilities, identification, educational provisions, Spanish National policies

## Introduction

From the new explanatory models of high intellectual ability (HIA; Dai & Chen, 2014; Subotnik, Olszewski-Kubilius, & Worrell, 2011), education must be the means to guarantee the full expression of potentiality into excellence and personal well-being that allows for the social and ethical capitalization of giftedness. As the educational landscape is still far from achieving the necessary equity and excellence, the new model calls for combining talent development with differentiation of the curriculum (Van Tassel-Baska, 2013). A school context lacking a differentiated and comprehensive educational theory of HIA becomes an environment with fragmented and potentially ineffective attention to the development of excellence (Renzulli, 2012). The educational attention to HIA in Spain varies according to each autonomous administration and their differential models and resources provided for education.

“HIA EDUCATION AIMS AT PROMOTING THE DEVELOPMENT OF STUDENTS WITH HIGH POTENTIAL IN AN ETHICAL AND RESPONSIBLE MANNER.”

## Background in Spain: The Role of Research

The study of HIA in Spain has had a long pathway with different labels of the phenomenon (giftedness, exceptionality, etc.), with different efficacy and real application to the educational world, and with brilliant moments and other quite

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dark periods. It has been a continuous development of projects, private initiatives, promising experiences, and unfulfilled expectations.

In this pathway, it is interesting to note a precedent to the HIA that can be considered “historical genius.” Huarte de San Juan (1529-1588), a physician and philosopher and a professor at the University of Alcalá de Henares, published the book *Examen de ingenios para las ciencias* (1575) which showed the differences in abilities of people and the types of studies that corresponded to each one. He devoted a chapter to rearing “wise” children (Chapter 17), caring to make them “ingenious” (Chapter 21), and norms for their proper education (Chapter 22). This little-known publication is considered to be the historical beginning of Spanish differential psychology.

It is necessary to move forward centuries later, until the S. XX, to find two differentiated nuclei of interest divided by the Spanish civil war (1936-1939). In the first period (1931-1936), there was already legislation (Decreets August 7, 1931, and March 22, 1934) to provide scholarships for gifted students with a few economic resources and a Service of Youth Psychology and Selection of Gifted Children and Young People. At the same time, the School Worker Selection Institute (Instituto de Selección Escolar Obrera) was created in Madrid, which operated as a pioneering special school for gifted students in two stages (1931-1936 and 1940-1970). In 1936, other short-lived educational experiences for gifted students began in other cities like Barcelona (the *Bosch School*) and Valencia. Some interesting scientific studies on the personality of the gifted and their identification (e.g., Linares, 1931; Vega-Ralea, 1932) appeared at this time, laying the foundations for the tutelary institutions of these children.

After the Spanish Civil War, interest in gifted education was restored weakly in the 1950s. At that time, there was some political interest to differentiate, select, and encourage gifted education, following the ideas of Terman. However, this was done without controlling the selection methods or its conceptual basis (e.g., Garmendia de Otaola, 1950). The subsequent decades were not very fruitful, with few authors (e.g., Perearnau, 1970) working on its conceptualization and adaptation to pedagogical needs.

The second period of renewed interest in HIA emerged well into the 20th century with the help of professors García Yagüe in Madrid (Universidad Complutense) and Genovard (Autonomous University of Barcelona) during the 1980s. Professor García Yagüe (1986) conducted the first large-scale experimental research on giftedness in Spain, with 17,028 students, 6 to 8 years old, in 16 Spanish provinces, to detect potential gifted individuals and determine their characteristics and educational needs, although it was not supported by a particular theory. In 1980, Genovard founded a research team on gifted children (equipo de investigación sobre niños y niñas superdotados [EINNS]) at the Universitat Autònoma de Barcelona and organized the First International Symposium on “Psychopedagogy of Exceptionality” in 1983. González and

Gotzens (1998) acted as driving forces of interest in the subject by

- creating a new model of giftedness (Genovard, 1982),
- developing identification instruments (Castelló & Batlle, 1998; Genovard, 1990), and
- emphasizing the need to train teachers in how to work with gifted students in classrooms (Genovard, Gotzens, Badía, & Dezcallar, 2010).

Through this work, they influenced nationwide practices (e.g., García-Alcañiz, 1995; Prieto & Bermejo, 1996; Sastre-Riba, 2004) and, starting in 1986, influenced the conceptualization and educational response to the HIA of the Department of Ensenyament of the Autonomous Government of Catalonia and the Spanish Ministry of Education. This effort inspired the teacher and professional training model for the identification and differentiation of the curriculum in the plan of the Government of Catalonia.

Meanwhile, at the state level, the Ministerial Order of December 30 (Boletín Oficial del Estado [BOE], No. 4, January 5, 1987) was promulgated, allowing the age requirement to be interpreted flexibly so that students with academic and personal peculiarities, and with satisfactory school results, could avoid unnecessary grade repetitions and possible negative effects.

From these pioneering works, laws and ministerial orders have been promulgated, and research groups have been organized in some Spanish universities (e.g., Autonomous University of Barcelona, Complutense University of Madrid, University of La Rioja, University of Murcia, University of Santiago de Compostela, etc.), which have been driving forces for change in the conceptualization, identification, and intervention of gifted students. In addition, associations of parents and scientific or professional associations have been created such as the Spanish Society for the Study of Giftedness (*Sociedad Española para el Estudio de la Superdotación*). Their aim has been to clarify the concept of giftedness scientifically, reduce commodification, and implement effective processes of identification for an inclusive and equitable educational intervention for excellence. Usually, university research groups also address the applied aspect of implementing differentiated curriculum or (curricular or extracurricular) enrichment initiatives, still not very connected with the school context, in a still fragile but very interesting scenario. For example, high social interest sometimes leads to the promotion and dissemination of valuable initiatives and conceptually blurred initiatives or IQ models that give rise to misdiagnoses and alternative interventions that can generate false expectations and possible misalignments for the expression of the HIA. On the contrary, the publication of some specialized journals (e.g., *Faisca, Revista de Altas Capacidades Intelectuales*) and recent special issues in journals with different international impact (e.g., *Revista formación profesorado*, 2010; *Revista de Educación Inclusiva*, 2012; or *Revista de Educación* of the Ministry of Education, 2015) are some examples of this rising interest. In

short, despite advances, it is essential to continue promoting the scientific knowledge of HIA and the effectiveness of its diagnosis and intervention.

## Current Models and HIA Concept

In Spain, different models coexist, some of them conceptually blurred, according to their more academic or professional orientation. At the university level, the predominant model is not the IQ but more complex models such as the ones by Renzulli (2012) or Van Tassel-Baska (2013). These models form the neuroconstructivist base representing multidimensionality as high potential that must be developed along the life span in which neurobiological, personal, and environmental conditioning factors go hand-in-hand for a more or less optimal expression of potential (Pérez, Díaz, & Domínguez, 1998; Sastre-Riba, 2008; Subotnik et al., 2011).

The intelligence quotient still prevails in the professional and psychopedagogical orientation fields, which, despite its recognized disadvantages, is an easy and widespread indicator. Without determining the suitability of the construct and the false positives or negatives it generates, some authors propose that the intelligence quotient in Spain is simply insufficient for estimating the top 2% of the population because of the stability, validity, and reliability of intelligence measures (Sastre-Riba & Castelló, 2017).

The most widely used model of identification is the one by Castelló and Batlle (1998), who postulates the multidimensionality and different forms of HIA: complex (giftedness) and specific (the various forms of talent). On one hand, giftedness is identified as a multidimensional complex profile in which any of the (representational) logical-deductive and creative intellectual abilities are located above the 75th percentile, allowing maximum interaction between them, as well as maximum complexity in the resulting cognitive functions. On the other hand, the different forms of talent represent a very high score (90th percentile or more) in one or several of these intellectual spheres, such as linguistic or mathematical, but not in all.

In short, although there is progress, there is still tension between a monolithic model based on a single intelligence quotient versus a multidimensional model of development and management of cognitive resources. This lack of conceptual consensus undermines identification and compromises the effectiveness of the educational intervention.

## Prevalence

During the 2015-2016 academic year, there were 7,177,098 children enrolled in schools in Spain according to statistics from the Ministry of Education and Science. Of these, 19,187 were students with HIA, corresponding to 0.27% of the total population, a considerable increase compared with those detected in the previous year (15,876). If we take into account the restrictive and obsolete criterion of an intelligence quotient >130 that corresponds to 2.28% of the population, many

students remain to be identified. With other less restrictive criteria such as those in Gagné's (2005) or Renzulli's (2012) models, the number of students identified would increase substantially.

The autonomous communities (educational authorities) are responsible for implementing identification programs and intervention plans for students with HIA. But the detection data differ greatly from one another. The percentages range from 1.206% in the Region of Murcia, where there are more students identified, to 0.012% and 0.017% in the communities of Valencia and Catalonia, respectively (see Table 1). In some of the communities with extensive collaboration between the Departments of Education and the university, great efforts have been made to identify students, reconciling the local and regional educational interests of some with the research of others.

On the contrary, the results of the Program for International Student Assessment (PISA) 2015 report (Organisation for Economic Co-Operation and Development [OECD], 2016) indicate that Spain is in the average range of academic performance when compared with other countries of the OECD, as its students obtain average scores of 496 (OECD 493) in reading, 486 (OECD 492) in mathematics, and 493 (OECD 493) in science. However, within the country, there are important variations among its local communities. As the OECD (2016) mentions,

socio-economic status continues to have an impact on students' opportunities to benefit from education and develop their skills. That is why equity in education—ensuring that education outcomes are the result of students' abilities, will and effort, and not the result of their personal circumstances—lies at the heart of advancing social justice and inclusion. (p. 39)

Comparing the number of students identified with HIA and PISA results, communities with the worst results (e.g., Murcia, Canary Islands, Andalusia) are making the most efforts to identify their students with high abilities. It may indicate that HIA identification should follow models that allow the identification of the top 10% of students with better possibilities for the development of their potential. Perhaps it would be interesting if the state effort focused primarily on the provision of strategies for implementing differentiated instruction, so that a wide range of upper level students would benefit from them, rather than just those who are identified.

On the contrary, with regard to excellence in science, PISA results indicate that 5% of students reach a level of excellence. Castile and Leon (8.6%), Galicia (7.3%), Navarre (6.8%), and Catalonia (6.7%) stand out among the autonomous communities (OECD = 7.8%). It may be an indicator that an educational response is not being offered to enhance talent in some autonomous communities because the percentage of students detected with HIA is low.

Table 1. Total and Percentage of Detected Students With HIA in Spain During 2014-2015 School Year in Different Stages

	Total	%	Second cycle infant education	%	Primary education	%	Secondary education	%	Baccalaureate	%	Basic vocational training (FP-B)	%	Middle vocational training (FP-GMT)	%	Higher vocational training (FP-GS)	%
Total	19,187	0.270	137	0.010	10,264	0.353	7,264	0.395	1,456	0.228	6	0.015	20	0.006	40	0.013
Andalucía	7,703	0.542	20	0.007	4,405	0.759	2,745	0.732	479	0.364	5	0.058	15	0.024	34	0.066
Aragón	98	0.052	0	0.000	37	0.048	53	0.110	8	0.048	0	0.000	0	0.000	0	0.000
Asturias (Principado)	600	0.493	6	0.026	339	0.703	200	0.634	53	0.442	0	0.000	0	0.000	2	0.028
Baleares (Illes)	527	0.324	6	0.018	255	0.370	200	0.471	61	0.517	0	0.000	2	0.031	3	0.074
Canarias	1,778	0.567	2	0.004	1,063	0.838	578	0.653	133	0.448	1	0.044	1	0.007	0	0.000
Cantabria	119	0.147	0	0.000	58	0.176	48	0.236	13	0.183	0	0.000	0	0.000	0	0.000
Castile and Leon	573	0.179	6	0.010	292	0.233	227	0.268	48	0.144	0	0.000	0	0.000	0	0.000
Castilla-La Mancha	294	0.090	7	0.011	181	0.137	94	0.109	12	0.039	0	0.000	0	0.000	0	0.000
Cataluña	194	0.017	4	0.002	109	0.023	62	0.021	19	0.021			0	0.000	0	0.000
Comunitat Valenciana	94	0.012	0	0.000	10	0.003	54	0.028	30	0.048	0	0.000	0	0.000	0	0.000
Extremadura	201	0.122	13	0.043	102	0.157	61	0.134	22	0.133	0	0.000	2	0.026	1	0.014
Galicia	1,392	0.405	47	0.072	854	0.630	415	0.468	76	0.229	0	0.000	0	0.000	0	0.000
Madrid (Comunidad)	1,741	0.175	9	0.004	1,057	0.258	585	0.233	90	0.093	0	0.000	0	0.000	0	0.000
Murcia (Región)	3,140	1.206	6	0.012	1,082	1.008	1,694	2.496	358	1.535	0	0.000	0	0.000	0	0.000
Navarre (Comunidad)	282	0.287	3	0.015	160	0.395	93	0.364	26	0.298	0	0.000	0	0.000	0	0.000
Pais Vasco	300	0.097	6	0.009	167	0.131	113	0.146	14	0.048	0	0.000	0	0.000	0	0.000
Rioja (La)	140	0.297	2	0.021	84	0.434	40	0.334	14	0.353	0	0.000	0	0.000	0	0.000
Ceuta	3	0.017	0	0.000	2	0.027	1	0.023	0	0.000	0	0.000	0	0.000	0	0.000
Meillia	8	0.045	0	0.000	7	0.096	1	0.023	0	0.000	0	0.000	0	0.000	0	0.000

Source. Ministerio de Educación y Ciencia (2016). Curso 2014-2015.

Note. HIA = high intellectual ability.

Turning to another subject area for comparison, the levels of excellence in reading are similar to the ones in science. The level of the OECD (8.3%) is higher than the Spanish one (5.5%). The best results are in Madrid (9.9%), Castile and Leon (9.8%), and Navarre (8.4%). In spite of obtaining good levels, a real differentiated instruction by capacity and talent has not been implemented. The best results in mathematics correspond to Navarre (13.6%), La Rioja (11.7%), and Castile and Leon (10.3%). The average Spanish percentage of excellence in mathematics is 7.3% and that of OECD is 10.5%.

PISA reports that Spain saw an increase in its share of students who attain the highest proficiency levels in PISA and a simultaneous decrease in the share of students who do not attain the baseline level of proficiency between 2009 and 2015 (OECD, 2016). Other results show that 70% of high-ability students have low school performance, and between 35% and 50% are failing. And most of them are not properly identified and evaluated and, therefore, are not adequately served. The Trends in International Mathematics and Science Study (TIMSS) 2015 report (Instituto Nacional de Evaluación Educativa [INEE], 2016) offers similar results to those of PISA in both mathematics and science.

In summary, all the indicators show that the socioeconomic and cultural differences between the autonomous communities of the north and those of the south of Spain enlarge the differences in science, reading, and mathematics competences of the PISA 2015 and TIMSS 2015 reports. However, many communities in the south of the country make economic efforts through action plans to alleviate the situation and detect their HIA students. However, in northern communities, where better results are obtained, there is also much to do to enhance excellence. As a result, the potential of the students is not fully developed.

## Definition and Education Legislation

According to the Spanish Ministry of Education (Ministerio de Educación y Ciencia [MEC]), students with HIA are considered by the Organic Law of Education 2/2006 (LOE) as students with specific needs for educational support and whose needs will be met as soon as their high abilities are identified following the principles of normalization and inclusion.

In Spain, the Ministry establishes that it is up to each autonomous administration (educational authorities) to establish measures: (a) to identify its needs in an early manner; (b) to adopt adequate action plans; (c) to ensure the necessary resources so that students can reach the highest possible development of their personal abilities and, in any case, the objectives established by the LOE for all students; (d) to ensure schooling; and (e) to regulate and ensure the participation of parents or guardians in decision making when schooling and educational processes are affected, as well as to take the appropriate measures so that parents receive the personalized counseling and the necessary information that helps them in the education of their children. The Ministry further requires that

the educational centers will make curricular adaptations and diversifications adjusted to these students in the different levels of compulsory education (Infant, Primary, and Compulsory Secondary Education) within educational projects, respecting the pedagogical autonomy principle of the legislation.

The most widespread practice is acceleration within the stages along the educational system, not so much curriculum compacting, but reducing the duration of each stage, regardless of the age of the students. When the ordinary measures taken in the educational center to attend to student development have already been met and become insufficient, then schooling may be initiated earlier or its duration is reduced with parent approval.

This acceleration practice must meet certain criteria:

1. Acceleration of a school year may be adopted a maximum of 3 times in basic education and only once in postcompulsory education, except in exceptional cases in which the Education Authorities may apply it without such limitations.
2. The length of the grades, cycles, and levels of the Specific Education System (arts, music, dance, design, languages, etc.) may be reduced so long as it does not exceed half the time generally established, although in exceptional cases, the Education Authorities may adopt acceleration without such limitation, incorporating measures and programs of specific support.

The Education Authorities shall determine the procedure and deadlines to be followed in their respective territorial scope to adopt the acceleration measure, as well as the appointing authority of staff to issue the corresponding resolution.

## Education Legislation

Nationwide, there is a greater interest in the education of gifted students as the international reports on education point out that “excellence” is one of the criteria of good educational systems. That is why the most recent organic laws (LOE, 2006; LOMCE, 2013) mention the development of talent as one of the foci for citizens of a new era.

In 1995, a royal decree was the first state regulation that tried to provide educational provisions to students with “intellectual giftedness.” They were considered as students with “special educational needs,” the same as other students with temporary or permanent needs, such as students with psychic, motor, or sensory disabilities. A year later, the state published a resolution that established the procedures to accelerate up to 2 years the schooling and guide the educational response of “pupils with special educational needs associated with personal conditions of intellectual giftedness.”

The MEC published two Orders (February 14, 1996): one about assessment of students with special educational needs and another one that regulated the procedure for carrying out the psychoeducational evaluation and the schooling report.

These orders were applicable throughout Spain, as the autonomous communities did not articulate their own legislation yet and were governed by the state. In 1996, a resolution was also issued by the state to determine the procedures for orienting the educational response to pupils with special education needs associated with conditions of intellectual giftedness.

The Organic Law 10/2002 on Quality of Education (LOCE) was the first law that deals directly with the subject of “intellectually gifted” students. It refers to them as students with specific educational needs, separating them from those with special needs. It indicates that educational authorities (autonomous communities) will take the necessary measures to identify and evaluate students’ needs in an early manner and take action to facilitate their schooling in centers that, due to their conditions, can meet their needs. However, lists of preferential schools were not published and students were enrolled in regular schools and curriculum was adapted for them. At present, as will be seen below, this situation has improved. It is also the responsibility of the education authorities to train teachers and guide parents.

A royal decree, in 2003, regulated the conditions to accelerate the duration of the various levels and stages of the educational system for students with HIA. Acceleration measures are expanded so that gifted pupils can enroll in a higher grade up to a maximum of 3 times in basic education and once in postcompulsory education. Acceleration also incorporates measures and programs of specific support and the parents’ agreement to take them.

Beginning with the LOE, the concepts of student with HIAs and precocious and talented students are used. The Organic Law 8/2013 for the improvement of the educational quality (LOMCE) did not bring substantive changes; it simply endorsed what had already been established in the LOE, that the educational provision of the students with HIA is based on an inclusive model, and the law mentions enrichment and acceleration as appropriate educational measures for them. The preamble of the LOMCE shows the importance of developing the talents of citizens in the Knowledge Society of the 21st Century. But the intentions reflected in the article are not articulated in the same way in all the autonomous communities as each one has developed its own legislation to extend what is indicated in the state regulations.

### Identification and Intervention Measures

Differences in the criteria to identify students with HIA are found when analyzing the regional legislation. Autonomous communities focus on IQ as a selection criterion, while others, following the model by Castelló (Castelló & Batlle, 1998), differentiate between simple talent, complex talent, and gifted, adopting other essential indicators for diagnosis such as creativity, high performance, rhythm, and style of learning, or other abilities, such as memory, attention, and concentration or cognitive flexibility, as shown in Table 2.

### Teacher Training

Although the White Paper on the Spanish Educational Reform in Chapter XIII (MEC, 1989) addresses teacher training, it has not been specialized according to students’ characteristics and needs until recently. When speaking of the implementation of a differentiated curriculum, implicitly or explicitly, the need for such training is now being recognized.

In Spain, the study of specialized teacher training began with the work of Genovard (1983) who analyzed qualities or possible traits of the teacher profile of these students, making one of the first profiles of the “ideal” teacher for students with HIA (Genovard et al., 2010). From then on, several papers have been published about specific training required (Pérez et al., 1998), and plans and training models are gradually being developed (Grau Company & Prieto Sánchez, 1996).

Spanish legislation generally provides specialized training for teachers and educational guidance teams. Based on this general principle, the different communities have developed specific models and programs, and some of them have published guidelines with theoretical and practical orientations. On the contrary, universities include in their undergraduate programs subjects related to these issues. Specific postgraduate programs have been designed such as the Master in Neuropsychology of High Intellectual Abilities at the University of La Rioja, which also organizes specific summer courses, and the expert course in the Development of Intelligence, Higher Capacity, and Neuropsychology at the Camilo José Cela University.

Several research studies examining the importance of teacher training have been conducted. For example, Del Caño Sánchez (2001) carried out an extensive study with about 500 student teachers, exploring their knowledge and beliefs about HIA students, evidencing the need for more training. Elices-Simón and Palazuelo-Martínez (2006) reported that the capacity of teachers as identifiers of students with HIA was related to the amount of training they received, and Tourón and Reyero (2002) found significant differences in attitudes toward HIA between teachers who had received specific training in this subject and those who had not. It is clear from these studies that specialized training improves teachers’ beliefs, attitudes, and identification of HIA students.

### Contexts and Current Agents of Educational Intervention

#### School Context: Curricular Intervention Models

The educational authorities, in their effort to organize an adequate response to the students with HIA, have specified the way to channel this educational response over the years. Although the first legislative documents mentioned the need for the specialization of the centers for students with HIA, these lists of schools were never published. At present, LOMCE (2013) establishes that schools should design a strategic plan. The educational project will involve the specialization of the schools, in some of the areas addressed, such as aiming at excellence and meeting the students’ specific educational support needs, where

Table 2. Basic Criteria of the Autonomic Legislation for the Identification of Students With High Abilities

Autonomous communities	HIA	IQ higher to 130	Superior capacidad (75th percentile)	Creativity	High performance	Simple talents (95th percentile) Complex 90th percentile)	Differentiated learning rhythm and style	Other capacities	Precocious (age younger than 12/13 years)
Andalucía			x	x		x			
Aragón			x	x		x			x
Asturias	x			x	x				
Islas Baleares	x								
Canarias			x			x			x
Cantabria	x			x	x				
Castile and Leon	x						x		
Castilla-La Mancha	x						x		
Cataluña	x			x	x	x		x	x
Comunidad Valenciana	x								
Extremadura	x			x	x				
Galicia	x			x	x				
Madrid		x		x	x				
Murcia	x			x	x				
Navarre	x						x		
País Vasco			x			x		x	x
La Rioja	x								

*Note.* HIA = high intellectual ability.

students with HIA are included. In recent years, legislative resolutions have come up annually with the approval and revision of the specialized centers for provision for these students, as it happens in the Community of Murcia or La Rioja. The educational measures established on a regular basis are (a) curriculum enrichment in mainstreaming, which implies a horizontal extension of the curriculum, and (b) acceleration. The education authorities will adopt action plans that include the identification of students with HIA and curriculum enrichment programs adapted to their needs that allow them to optimally develop their abilities.

### Out-of-School Context: Enrichment Programs

A great number of studies have demonstrated the need for out-of-school programs because they provide a different learning experience from the classroom and cover subjects and

activities that ordinary education cannot address. One of their characteristics is that they encourage personal development, organizing content in personalized and flexible structures. They are valid for all forms of giftedness and talent and necessary to prevent and counteract the problems of low academic achievement and demotivation that are usually caused usually by performing very simple or already learned tasks. For many students, they face for the first time a learning situation that really requires effort and concentration.

Pioneering programs in Spain have been the Star Program (Programa Estrella) at Camilo José Cela University (SEK Institution), which has been in operation for more than 25 years (Pérez, 2006), the University of Santiago de Compostela, and the University of La Rioja (Sastre-Riba, 2013). Other initiatives of interest, such as the Interactive and Technological Autoregulated

Constructive Model (CAIT), are based on information processing and emphasize the teaching of processes over content. It has been shown to be beneficial for high-ability students (Pérez & Beltrán, 2008).

There are public institutions (e.g., the Autonomous Community of Madrid), which have developed an extracurricular intervention program (PEAC) for all students identified in the Community. Other communities such as Galicia or the Canary Islands have also created their own programs, as other private institutions or associations have done.

These types of programs are a necessary complement to school activities and provide content beyond the school day. They aim to achieve full personal development, enhance the skills already acquired, and prevent school disintegration and personal dyssynchrony as risk factors in the development of the most capable.

Some of their objectives are the following:

- To achieve harmonious personal development.
- To encourage the use of thinking processes.
- To encourage cognitive development toward scientific knowledge.
- To develop relational skills among equals.
- To prevent behavioral dysfunctions.
- To prevent learning difficulties.
- To prevent motivational problems caused by lack of access to advanced curriculum.

The content of these opportunities are quite varied and are always organized in personalized and flexible structures, with four large areas of intervention and activities: (a) cognitive training or cognitive modulation, (b) personal–social counseling for students and their families, (c) specific enrichment activities, and (d) experiences among peers. The students access the Enrichment Program voluntarily. The only requirement is to have an assessment report conducted by specialized professionals where their personal and intellectual characteristics are reflected. In short, they offer an environment that allows students with HIA to go beyond the school context, fostering high level thinking, managing of intellectual resources, and being in contact with peers.

## Family

In Spain, based on the research and scientific literature published, more attention has been paid to aspects of intellectual development or school intervention than to monitoring the problems of families with children with HIA. Some researchers (e.g., López-Escribano, 2002) collect information regarding the demands and needs of parents of students with HIA for training through technologies (Information and Communication Technology [ITC]). Other works, such as Pérez (2004), include the situation and characteristics of these family groups and identify publications

with specific support material for families (Pérez, Domínguez, López, & Alfaro, 2000).

Most family support or training programs have been carried out by private initiatives of institutions or family associations. As an example, the parent training course offered by SEK educational institution covers topics such as the differential development of the child with high ability, intelligence and creativity, false myths, educational strategies, and family coping, among others. Most of the extracurricular support programs are accompanied by some kind of support service for parents. For example, the Extracurricular Enrichment Program of the University of La Rioja (Sastre-Riba, 2013) organizes interactive seminars on HIA and Family around the topics that the parents indicate interest with specialists participating and providing specific materials.

## Research: Models and Points of Interest

The Spanish research of HIA has been stimulated by international studies and those of pioneers Genovard (1982) and García Yagüe (1986), within the context of the differential psychology of intelligence and education. Current research highlights lines of study on (a) metric approximation, identification, and profiles; (b) cognitive functioning and creativity; (c) management of cognitive resources; (d) socioemotional characteristics; (e) gender; and (f) enrichment programs and their effectiveness such as the work of Hernández and Gutiérrez (2014).

## Metric Approximation, Identification, and Profiles

Castelló (2008) studied the multidimensional configuration of HIA in different profiles of giftedness and talent (according to its complexity), using multifactorial tests as *Batería de Aptitudes Diferenciales y Generales* (BADyG.) or DAT and the *Torrance Test of Creative Thinking* (TTCT). This model has greatly influenced the guidelines that the autonomous communities have applied to the screening and assessment of students. Current work (Sastre-Riba & Castelló, 2017) revolves around the effectiveness of the diagnosis of HIA and studies the validity, stability, and reliability of known measurements and their suitability for multidimensionality and potential development using multifactorial tests and measures of metacognition and executive functioning.

Ferrándiz et al. (2010) have implemented a model to identify high ability and talented students in secondary education and their different profiles. The variables analyzed include instruments such as questionnaires (parents, teachers, and students) based on the Multiple Intelligences Theory, DAT test, the TTCT, and the BFQ-NA (i.e., the Big Five Personality Questionnaire) to assess socioemotional characteristics and socioemotional competence (EQ-i: YV and EQ-i: YV-O; that is, emotional quotient assessments). They have also adapted the *Bar-On Emotional Quotient Inventory* to the Spanish context.

## Cognitive Functioning and Creativity

Sastre-Riba (2008, 2011) studied the differences in the processes and products in different profiles (gifted, multiple talents, simple talent, and typical intelligence) in a linguistic task. Differential resolution patterns were obtained according to intellectual profiles, quantitatively (greater amount of information), and qualitatively (greater relational complexity between the information). Other results were obtained on creative functioning, depending on the different profiles among HIA (Sastre-Riba & Pascual-Sufrate, 2015).

Some authors propose that high-ability students score better than middle-level students in self-perception creativity questionnaires (López, García, Ferrándiz, & Prieto, 2000) and in divergent thinking tasks (for more information, see Hernández & Gutiérrez, 2014), demonstrating that there are important differences in creativity among the group of high-ability students. The study also shows the content and internal validity of the instrument used. These findings echo earlier studies on creativity in the United States, suggesting that creativity varies across intellectually able students (see Getzels & Jackson, 1962).

Other pieces of research include the variables of mental attention and self-regulation, comparing students with high and moderate IQ. Students with high IQ have better ability to modify their behavior according to the demands of a specific situation and ignore interferences during a task resolution (Calero, García-Martín, Jiménez, Kazén, & Araque, 2007). This finding is consistent with other studies worldwide on the better metacognitive capacity of the gifted (Barfurth, Richtie, Irving, & Shore, 2009).

## Cognitive Resource Management

Some studies focus on the role of metacognitive regulation and executive functions to manage cognitive and personal resources effectively in HIA students to attain excellence (Sastre-Riba, 2011; Sastre-Riba & Viana, 2016). These studies show the relevance of high functioning of working memory in all HIA profiles as the basic executive process for convergent and divergent intellectual functioning, and the differential role of shifting and inhibition, which are greater in the complex profile of giftedness and lower in the convergent talent profile. Other results confirm the role of inhibition and working memory in creative functioning (Sastre-Riba & Pascual-Sufrate, 2013), highlighting the differential role of shifting and inhibition.

## Socioemotional Characteristics

In relation to the noncognitive variables that affect giftedness, different research results show that there is not sufficient evidence to support maladjustment, nor significant differences between students with and without HIA in their behavioral, intellectual, and physical self-concept, as well as in self-perceived happiness and satisfaction (see a revision in Hernández & Gutiérrez, 2014).

## Gender

Pérez, Beltrán, González, and Adrados (2007) found significant gender differences between gifted students, reporting that boys scored significantly higher in academic performance. These findings are comparable with findings in the United States especially in mathematical aptitude, which still favors boys (see Wai, Lubinski, & Benbow, 2009).

## Effectiveness of Enrichment Programs

Some studies have shown the efficacy of extracurricular enrichment and specific educational practices that promote the development of HIA (Sastre-Riba, Fonseca-Pedrero, Santarén-Rosell, & Urraca-Martínez, 2015), corroborating the results of other research in the United States (Olszewski-Kubilius, 2007; Van Tassel-Baska, 2013), showing the value of extracurricular interventions for gifted learners.

In short, there is a broad array of issues addressed, in an increasingly internationalized scenario that, in addition, maintains a close feedback with the applied context.

## Conclusion

HIA education aims at promoting the development of students with high potential in an ethical and responsible manner to increase their levels of motivation, personal satisfaction, and well-being and to increase the number of people who bring useful and innovative products, innovations, and high performance to the world.

Spain has promoted this objective and worked toward its achievement for four decades. Although results may seem insufficient, they are significant and include the following:

- Raising social, academic, and administrative interest and awareness toward HIA, promoting differentiated instruction that is not only inclusive but also equitable and responsible;
- Enacting legislation for the recognition and education of excellence;
- Strategically planning the specialization of educational “Centers for Excellence”;
- Implementing curricular and extracurricular educational initiatives; and
- Researching conceptualization, identification, and intervention models according to the international scene.

These achievements entail a series of challenges for progress in the field. Among these are the following:

- Knowing in depth the effectiveness and conceptual authority of the identification and implemented intervention practices;
- Knowing the effectiveness of enrichment initiatives implemented and their results;
- Knowing the stability and effectiveness of the diagnosis of HIA;

- Promoting ethically and with responsibility the achievement and crystallization of HIA;
- Knowing the role and limits of emerging technologies in the generation of new types of high abilities;
- Relying on neuroscience to understand the functioning and determinant of the development for the expression of high initial potential;
- Knowing and reducing the impact of poverty and multicultural differences in the diagnosis and provision of measures for HIA;
- Studying how gender affects the expression of HIA;
- Studying the social-emotional impact of HIA on the well-being of people with high potential; and
- Fostering collaboration and feedback between educational and academic contexts.

To this end, it is necessary to continue articulating theory, research, and educational practice with clarity and rigor, relying on interdisciplinary perspectives, both neurobiological and functional, that allow us to know the effectiveness of the educational impact on the optimal development of HIA, facilitating higher level thinking processes and excellence. It calls for articulating measures with sustained and resolute administrative support, for personal well-being and responsible social progress beyond purely political interests.

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