

## Evaluation of satisfaction in an extracurricular enrichment program for high-intellectual ability participants

Sylvia Sastre i Riba, Eduardo Fonseca-Pedrero, Marta Santarén-Rosell and María Luz Urraca-Martínez  
University of La Rioja

### Abstract

**Background:** The objective of this study was to evaluate the satisfaction of an extracurricular enrichment program of the cognitive and personal management of participants with high intellectual ability. **Method:** At the first time point, the sample consisted of  $n=38$  participants, and  $n=20$  parents;  $n=48$  participants at the second time point; and  $n=60$  participants at the third time point. The Satisfaction Questionnaire (CSA in Spanish), both for students (CSA-S) and for parents (CSA-P), was constructed. **Results:** The CSA-S scores showed adequate psychometric properties. Exploratory factor analysis yielded a unidimensional structure. Cronbach's alpha ranged between .85 and .86. Test-retest reliability was 0.45 ( $p<.05$ ). The generalizability coefficient was .98. A high percentage of the sample was satisfied with the program, perceived improvements in cognitive and emotional management, motivation and interest in learning, and in the frequency and quality of their interpersonal relationships. **Conclusions:** The evaluation of educational programs is necessary in order to determine the efficacy and the effects of their implementation on the participants' personal and intellectual management.

**Keywords:** Extracurricular enrichment; satisfaction; measurement; high intellectual ability; assessment.

### Resumen

*Evaluación de la satisfacción de un programa de enriquecimiento extracurricular en participantes de alta capacidad intelectual.*

**Antecedentes:** el objetivo de este estudio fue evaluar la satisfacción de un programa de enriquecimiento extracurricular para el desarrollo cognitivo y la gestión de recursos de los participantes de alta capacidad intelectual. **Método:** en el primer punto del tiempo la muestra fue de  $n=38$  participantes y  $n=20$  padres;  $n=48$  participantes en el segundo punto de tiempo; y  $n=60$  participantes en el tercer momento temporal. Se construyó el Cuestionario de Satisfacción (CSA), con una versión para el alumno (CSA-A) y otra para los padres (CSA-P). **Resultados:** las puntuaciones CSA-A mostraron propiedades psicométricas adecuadas. Una estructura esencialmente dimensional fue encontrada cuando se llevó a cabo el análisis factorial exploratorio. El alfa de Cronbach osciló entre 0,85 y 0,86. La fiabilidad test-retest fue 0,45 ( $p<0,05$ ). El coeficiente de generalizabilidad fue de 0,98. Un alto porcentaje de la muestra se mostró satisfecho con el programa y percibió mejoras en gestión cognitiva y emocional, en la motivación y el interés hacia el aprendizaje, y en la frecuencia y calidad de sus relaciones interpersonales. **Conclusiones:** la evaluación de los programas extracurriculares es necesaria con el fin de determinar la eficacia y los efectos de su aplicación en la gestión personal e intelectual de los participantes.

**Palabras clave:** enriquecimiento extracurricular; satisfacción; medida; alta capacidad intelectual; evaluación.

From the new paradigm (Dai & Chen, 2013; Matthews & Foster, 2006; Dai, 2005), High Intellectual Ability (HIA) consists of a high initial intellectual potential, multidimensionally configured in various competencies, which should, with development, crystallize into a manifestation of excellence. The cognitive functioning of these individuals differentiates their manifestations of giftedness and talent and distinguishes them from people of average intellectual ability.

Therefore, it is an important responsibility not only to implement educational intervention initiatives, but also to ensure that they are

really designed for people with HIA and that they are efficacious. To be effective, the education of the gifted and talented should be based on scientific models or paradigms (Van Tassel-Baska, McFarlane, & Feng, 2006), which indicates the need to start from an explanatory scientific theory of the nature, characteristics and development of HIA to substantiate a differentiated strategy, whether curricular or extracurricular, and to facilitate the manifestation of excellence according to the individual's potential.

A program of educational intervention in HIA is defined as a purposeful set of activities that expend resources to implement processes, procedures, and/or activities that operate in some context to accomplish some outcomes (Brown, Gubbins, & Moon, 2005). These educational activities are differentiated and tailored to the profile of the participants who require the intervention of specialized mentors and they involve the responsibility of responding to the initial objectives. This implies that the education of the gifted and talented students must fulfill

at least two requirements: a) the diagnostic reliability to reveal the competencies of the target individuals, and b) the evaluation of the effectiveness the achievements on this pathway to the manifestation of eminence.

The educative evaluation should be conceptualized as a part of the development of the program so that each of its objectives or expected results (not just those with positive effects) is subject to evaluation. Accordingly, programs should be measured with regard to their cost-effective benefits, which means selecting the appropriate methodology for this purpose. It is possible to choose between two ways of doing this: through the scientific evaluation of the programs, or by applying standards such as those set by the *International Panel of Experts for Gifted Education in Europe*, (2009), the *Illinois Exemplary Program Handbook* (1979), or the *Snapshot Survey of Gifted Programming Effectiveness Factors* (Lord & Cotabish, 2010) of specific and contextualized validation.

The first form, the evaluation of educational outcomes in HIA following scientific guidelines (Chacón, Sanduvete, Portell, & Anguera, 2013) takes into account the following components: (a) efficacy, that is, whether the objectives were met; (b) effectiveness, with regard to whether, in addition to the objectives, other (positive, negative or neutral) unexpected effects were achieved; (c) efficiency, as a cost-benefit relationship of the results obtained in addition to the relationships of cost-effectiveness and cost-utility; (d) continuity; (e) progress; (f) proven adequacy; (g) utility; (h) ethic valoration; and (i) equity. To attain the internal consistency of the expected results, the following aspects should be considered: (a) who the program is aimed at; (b) the type of information obtained; and (c) whether the evaluation process is synchronic or diachronic, the latter being the most appropriate as a reflection of what happens over time and the effects of the program on development as a continuum (Van Tassel-Baska, 2012).

The process of synchronic or diachronic evaluation of educational intervention programs in HIA research presents a number of limitations that may condition but do not invalidate the results. This is particularly so in those that are carried out as extracurricular activities like the one presented herein. Among the most important recognized limitations, we highlight the following:

- a) Not everything can be evaluated, because the data set and variables involved are so broad that the evaluation should limit what it measures in accordance with the objectives or the expected results that guide the program (Chacón, Chaves, Sanduvell, & Anguera, 2013).
- b) The number of participants from whom the data were extracted must be taken into account since a minimal amount of evidence is necessary. In most cases the estimate of the power of generalization is essential using a framework such as Generalizability Theory (GT) (Cronbach, Rajaratnam, & Gleser, 1972), providing a more satisfactory framework for adapting to the particular conditions of each object of measurement (Blanco, Sastre-Riba, & Escolano, 2010).
- c) It is difficult to know the possible interactions between the variables in other contexts and those specific to the particular intervention. Therefore the possible threats to the validity of the information must be considered and appropriate statistical adjustments should be made using alternatives such as the one previously offered by GT, which, in addition

to calculating the power of generalization of the results based on the sample size, also enables the study of the sources of variation or error, integrating them in a global structure that enables us to optimize the measure.

Despite these limitations, it is necessary to measure the effectiveness of the gifted and talented education and, as indicated by Van Tassel-Baska (2012), the most important challenge is to evaluate whether they actually learn using higher levels of thinking. This basic challenge has led to the evaluation of an extracurricular enrichment program which has been carried out for seven years at the University of La Rioja (Spain) (Sastre-Riba, 2013). This extracurricular enrichment program is based on a concept of development of giftedness and talent in line with the new paradigm and it has three inter-related components: a) research on the nature and functioning of high abilities, their differential manifestations and stability in their measurement; b) the activity of extracurricular enrichment itself; and, c) the evaluation of the program's efficacy and the satisfaction of attendees and their family members. Thus, we deal with the conceptual input at the outset, the efficacious extracurricular activity, and the result achieved, in accordance with the proposal by Van Tassel-Baska et al. (2006).

The objectives of the program are as follows (see Sastre-Riba, 2013, 2014): 1) to strengthen the harmonious development as individuals supporting the crystallization of their high competence; 2) to enhance cognitive development and cognitive management; 3) to foster the development of interpersonal skills among equals; 4) to prevent behavioral and/or learning dysfunctions; 5) to prevent motivational difficulties due to the mastery of curricular materials. To evaluate the efficacy of the intervention, in line with its objectives, the program measures: 1) the stability of the repeated intellectual ability and creativity; 2) the management of cognitive resources using the Metacognitive Awareness Inventory (Schraw & Dennison, 1994); 3) the trajectories of the development through latent growth models (McCoach, Rambo, & Welsh, 2013); 4) the personal adjustment through autobiography (i.e., U-shaped Questionnaire) and perfectionism (i.e., Almost Perfect Scales); 5) classroom observation using the Classroom Observation Scales-Revised (COS-R) (Van Tassel-Baska, 2012); and 6) the satisfaction of the participants and parents with the enrichment program, using the Satisfaction Questionnaire presented in this study.

Due the significant lack of procedures and tools for measuring the effectiveness and satisfaction of such programs, this paper focuses on the measure of participant satisfaction, as an approach to the efficacy (Chacón et al., 2013), of an extracurricular enrichment program for young people with HIA and their parents. This overall goal is divided into three specific objectives: a) the construction and validation of an instrument for measuring the satisfaction of participants and parents; b) the longitudinal analysis of the degree of satisfaction of participants regarding the perceived cognitive and emotional management as well as personal development; and c) examination of the aspects that the participants of the extracurricular enrichment program indicated as possible improvements. We hypothesized that the CSA scores would be associated with adequate psychometric properties and that scores would be stable across time periods. We also hypothesized that the means of the CSA items would be high and would be associated with perceived improvements in the cognitive and emotional management, as well as in the frequency and quality of their social relationships.

## Method

## Participants

The participants were selected incidentally. They all attend the enrichment program at the University of La Rioja and have been previously diagnosed as having HIA in one of the profiles that it includes (giftedness or talent). All the participants had a HIA diagnosed by the educational psychologist of the educational center. This diagnosis was confirmed for our research team. The criteria for inclusion are showed in the procedure. At the first time point (academic year 2011-2012)  $n = 38$  students participated (29 male and 9 female). The age range was between 7 and 15 years, the average age being 10.8 years ( $SD = 4$ ). A total of  $n = 19$  parents participated in this first phase (68.9% female,  $M = 43$  years,  $SD = 4.6$ ). At the second time point (academic year 2012-2013)  $n = 48$  students participated (35 male and 13 female) with an age range between 7 and 17 years ( $M = 11.9$  years,  $SD = 2.7$ ). At the third time point (academic year 2013-2014) the sample of participants was  $n = 60$  students (35 male and 25 female) with an age range between 8 and 17 years ( $M = 10.5$  years,  $SD = 2.1$ ). In the first stage information was collected regarding parental satisfaction, too. The total number of participants with various assessments was:  $n = 25$  (2011-12/2012-13), and  $n = 22$  (2012-13/2013-14),  $n = 12$  (2011-12/2013-14) and  $n = 8$  (2011/12-2012/13-2013-14). Of those a total of  $n = 95$  participants were selected (only its first assessment) to conduct the exploratory factor analysis. The time of the first measurement coincided with the end (academic year) of the participation in the extracurricular enrichment program.

## Instrument

The instrument used was the *Satisfaction Questionnaire* (CSA in Spanish). The CSA is a measuring instrument specifically developed for the evaluation of participant satisfaction in the extracurricular enrichment program. The process of its construction was conducted in a systematic and rigorous manner, according with the international guidelines (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1999; Downing, 2006; Schmeiser & Welch, 2006; Wilson, 2005) to guarantee the results extracted. The wording of the items followed the guidelines for the construction of multiple-choice items (Haladyna, 2004; Moreno, Martínez, & Muñiz, 2006). The content validity was confirmed by a panel of four experts in the thematic evaluation of intervention programs for students of high abilities.

Two versions of the questionnaire were produced: Students (CSA-S) and Parents (CSA-P) in line with the multi-informant evaluation systems. The CSA-S consists of a total of 29 items plus three open questions that examine the aspects rated as the most positive in the program and those that require improvement (see Table 1). The parent version consists of the same 29 items reformulated in the third person, plus 12 specific items measuring their evaluation of the enrichment program (see Table 3). The response format was a Likert-type scale with five categories: from 1 "completely disagree" to 5 "completely agree". This response format improves the reliability of scores and the evidence of validity (Lozano, García-Cueto, & Muñiz, 2008; Muñiz, García-Cueto, & Lozano, 2005).

Table 1  
Satisfaction Questionnaire Students' Version (CSA-S)

1.	I am happy with my participation on the program <i>Estoy contento con mi participación en el programa</i>
2.	The things that I do on the enrichment program are more interesting than the things that I do at school <i>En el programa de enriquecimiento hago cosas más interesantes que las que puedo hacer en la escuela</i>
3.	I am happy with the mentors on the program <i>Estoy contento con los mentores del programa</i>
4.	I understand my peers' feelings more since I have been on the program <i>Entiendo mejor las emociones de mis compañeros desde que vengo al programa</i>
5.	I would like to continue on the program <i>Me gustaría seguir en el programa</i>
6.	Since I have been on the program I am better at solving problems (math, logic, etc.) <i>Desde que vengo al programa resuelvo mejor los problemas (matemáticos, de lógica, etc.)</i>
7.	I would recommend the program to other kids like me <i>Recomendaría el programa a otros niños como yo</i>
8.	I know more things (science, technology, etc.) since I have been on the program <i>Sé más cosas (ciencia, tecnología, etc.) desde que vengo al programa</i>
9.	On the program I do activities that I cannot do at school <i>En el programa hago actividades que no puedo hacer en la escuela</i>
10.	I am more interested in learning new things now <i>Ahora tengo más interés por aprender cosas nuevas</i>
11.	I like coming to the program on Saturdays <i>Me gusta venir los sábados al programa</i>
12.	I know how to express my emotions better since I have been on the program <i>Sé expresar mejor mis emociones desde que vengo al programa</i>
13.	I have made new friends on the program <i>He hecho nuevos amigos en el programa</i>
14.	Since I have been coming here I know how to solve problems that I have with my fellow participants on the enrichment program <i>Desde que vengo aquí sé cómo resolver los problemas que tengo con mis compañeros del programa de enriquecimiento</i>
15.	The friends I have made on the program are good friends <i>Los amigos que he hecho en el programa son buenos amigos</i>
16.	Since I have been on the program I know how to solve problems that I have with my peers at school <i>Desde que vengo al programa sé cómo resolver los problemas que tengo con mis compañeros del colegio</i>
17.	I am happy with my fellow program participants <i>Estoy contento con mis compañeros del programa</i>
18.	Since coming on the program I understand my feelings better <i>Desde que vengo al programa comprendo mejor lo que siento</i>
19.	I have problems with my fellow program participants* <i>Tengo problemas con mis compañeros del programa*</i>
20.	I feel better since coming on the program <i>Me siento mejor desde que vengo al programa</i>
21.	I talk about things that interest me with my fellow program participants <i>Con mis compañeros del programa hablo de cosas que me interesan</i>
22.	I feel that the other children on the program are like me <i>Siento que los demás niños del programa son como yo</i>
23.	I propose new ideas and workshops to the mentors <i>Propongo a los mentores nuevos talleres e ideas</i>
24.	Since coming on the program I know better what I am capable of doing <i>Desde que vengo al programa conozco mejor lo que soy capaz de hacer</i>
25.	My ability to use what I know has improved <i>Ha mejorado mi capacidad para utilizar lo que sé hacer</i>
26.	Now I can create more new things <i>Ahora puedo crear más cosas nuevas</i>
27.	The program allows me to learn new things that I cannot learn at school <i>El programa me permite aprender cosas nuevas que no puedo en la escuela</i>
28.	The enrichment program helps me to improve my school work <i>El programa de enriquecimiento me ayuda a hacer mejor las tareas que hago en la escuela</i>
29.	Since I have been on the program I have more new ideas <i>Desde que estoy en el programa tengo más ideas nuevas</i>

Note: The items of the Spanish version are in italics. \* Item 19 will be recoded

The CSA was constructed based on four theoretical facets: *General Satisfaction* (items 1, 2, 3, 5, 7, 9, and 11), *Cognitive Management* (items 6, 8, 10, 23, 24, 25, 26, 27, 28, and 29), *Interpersonal Relationships*, (items 13, 15, 17, 19, 21, and 22), and *Emotional Management* (items 4, 12, 14, 16, 18, and 20), selected based on the models of HIA and the evaluation of extracurricular enrichment programs (Brown, 2005; Van Tassel-Baska, 2012). The number of items within each facet was homogeneous in order to guarantee the content validity and to avoid under- or over-representation of the construct that is being measured (Sireci & Faulkner-Bond, 2014). The facet of *General Satisfaction* refers to the students' perception of the well-being that they obtained attending the extracurricular enrichment program, their opinion of the mentors and their interest in continuing to participate in the program. The facet of *Cognitive Management* refers to the students' perceptions of their improvements regarding their management of cognitive resources, creativity, new learning and knowledge. The facet of *Interpersonal Relationships* refers to students' perceptions of their relationships with their peers, the quality and difficulty of these relationships and the sense of belonging and new friendships. The facet of *Emotional Management* captures the self-perceived improvements in the ability to manage and regulate their emotional states. All of the facets refer to the participants' experience since joining the program.

#### Procedure

The steps followed were:

- 1) Multidimensional intellectual measurement through: a) Differential Aptitude Test (D.A.T.) (Bennett, Seashore, & Wesman, 2000) for the logical-deductive intellectual skills; and b) Torrance's Test of Creative Thinking (Torrance, 1974). Participants with a score in the 75th percentile or above in all intellectual aptitudes measured were categorized as gifted (Castelló & Batlle, 1998). Those whose score was in the 90th percentile or above in any one or various intellectual aptitudes were categorized as simple or complex talents.
- 2) Pilot study (quantitative and qualitative) to determine whether the participants adequately understood the statements and questions contained in the CSA-S.
- 3) Administration of the CSA-S, and/or CSA-P at three time points, corresponding to the end of the academic year on the extracurricular enrichment program. The administration was carried out collectively for the parents, and in groups of up to 10 participants for the students, during the regular timetable of the enrichment program, in a classroom equipped for this purpose and under the supervision of a researcher that they knew. The instruction given was to respond sincerely regarding their satisfaction with the program. The confidentiality of the responses was assured at all times, as was the voluntary nature of participation. The participants received no incentive for their participation.

#### Data analyses

Different data analyses were performed:

- 1) Study of the psychometric properties of the CSA scores for which the following steps were taken: a) descriptive

statistics were calculated for the items of the CSA, both for the students' version (at different time points) and the parents' version; b) the internal structure of the CSA scores was examined using an exploratory factor analysis on the items (Rios & Wells, 2014) with the method of principal axis factoring; and, c) the reliability of the scores on the CSA was estimated using Cronbach's alpha and Pearson's correlation for the temporal stability of scores between the different time points.

- 2) Examination of the issues valued most positively and the areas for improvement in the program. The Pearson's correlation was calculated between the total score of the CSA-S and the CSA-P in the cases where the two values were available. The mean scores of the participants were also compared using the Wilcoxon Z (two time measurements), and using the nonparametric Friedman test (three time points).
- 3) Calculation of the coefficient of generalizability of the results with two Optimization Plans.

#### Results

##### *Evidence of validity of the internal structure of the CSA-S*

The exploratory factor analysis of the 29 items that comprise the CSA-S was performed on a sample of  $n=95$  participants. The Bartlett sphericity index was 1889.4 ( $p<0.001$ ) and the Kaiser-Meyer-Olkin value was 0.89. The analysis of the scree plot, the *eigenvalues*, the value of the communalities, and the weight of the factor loadings were used to determine the number of factors. According to these criteria a general factor that explained 42.02% of the total variance (*eigenvalue* = 12.18) was extracted. All of the estimated factor loadings were greater than 0.40 (see Table 2). The results of the exploratory factor analysis suggest that the internal structure underlying the CSA-S scores is essentially one-dimensional.

##### *Estimation of the reliability of the CSA-S and CSA-P scores*

The internal consistency for the total score of the CSA-S in the first year was 0.86, in the second year it was 0.86, and in the third it was 0.94. Meanwhile, the internal consistency for the total score of the CSA-P was 0.85. The correlation between the total score of the CSA-S between the academic years 2011/12-2012/13 was 0.55 ( $p<0.05$ ). The correlation between the total score of the CSA-S between the years 2012-13/2013-14 courses was 0.56 ( $p<0.05$ ). The correlation of the total score of the CSA-S between the years 2011/12-2012/13 was not statistically significant ( $p>0.05$ ).

##### *Participant satisfaction with the extracurricular enrichment program*

The mean scores of the items were high (see Table 2). Among the highest values, the items relating to *cognitive management* and *creativity* stand out, which measure aspects such as creating new things, improved performance of schoolwork tasks, and knowledge and management of their abilities. The value of the Pearson correlation coefficient between the parents' scores for their children and those of the participants themselves on the enrichment program was not statistically significant ( $r=0.535$ ;  $p>0.05$ ). Table 3 shows the scores of parents in response to the 12 issues rated



in the second part of the CSA-P. The mean scores of the items were also high indicating general satisfaction with the functioning, facilities, organization, structure and fulfilling their expectations regarding the enrichment program.

Table 4 presents the frequency analysis of the items indicating the issues that students valued as most important in their participation in the enrichment program. Specifically, a large number of participants were happy with the program and made new friends there. Moreover, many of them expressed the wish to continue in subsequent years. It is also worth mentioning that they appreciated that, after attending the enrichment program, they had more new ideas and learnt new things that are not taught in school. Table 5 lists some of the comments made by participants on aspects they value as most positive. Table 6 presents the comments for possible improvement of the program according to students' perceptions. All of these are of interest, qualitatively, in optimizing the effectiveness of the program.

Finally, the comparisons of the mean scores for the different time points were:  $M_{11}= 123.7 (SD= 9.6)$ ,  $M_{12}= 119.8 (SD= 15.2)$  ( $Z= -1.320$ ;  $p= 0.187$ );  $M_{11}= 130.9 (SD= 8.9)$ ,  $M_{13}= 116.7(SD= 15.4)$  ( $Z= -2.703$ ;  $p= 0.007$ );  $M_{12}=120.5 (SD= 20.1)$ ,  $M_{13}= 120.4 (SD= 13.9)$  ( $Z=-0.195$ ;  $p= 0.845$ ) and  $M_{11}= 129.3(SD= 9.32)$ ,  $M_{12}=$

$127.2 (SD= 13.2)$ ,  $M_{13}= 116.6 (SD= 13.7)$  ( $\chi^2= 5.872$ ;  $p=0.053$ ). As can be observed, the scores of participants decrease between the different time points, this being statistically significant between the second and third time point.

*Analysis of the generalizability of the results*

The coefficient of generalizability of the results was high (0.98). To determine whether this was the optimum accuracy or it could be improved, an optimization plan was performed with two projections, increasing the sample size to  $n= 145$  and  $n= 190$  participants. The values obtained were 0.98 and 0.90 respectively showing that increasing the number of participants required does not compensate for the cost. The coefficient obtained allows us to conclude that the results can be generalized with a high degree of accuracy to the general population.

Conclusion

As described above, it is necessary to rethink the education of persons with HIA, promoting fairness and efficacy, in order to ensure that the multiple realities of its expression are addressed

Table 2  
Descriptive statistics for the items at the three time points and estimated factor loadings for the CSA-Students' version

Items	First year		Second year		Third year		Factorial loadings
	Mean	SD	Mean	SD	Mean	SD	
1	4.68	0.62	4.52	0.82	4.58	0.62	0.76
2	4.66	0.78	4.48	0.77	4.67	0.68	0.58
3	4.68	0.7	4.48	0.77	4.67	0.60	0.68
4	4.08	0.82	3.85	1.09	3.50	1.14	0.64
5	4.82	0.61	4.35	1.14	4.65	0.66	0.76
6	4.08	0.94	3.6	1.25	4.08	1.17	0.74
7	4.63	0.82	4.42	0.94	4.57	0.77	0.70
8	4.68	0.53	4.4	0.87	4.70	0.70	0.74
9	4.84	0.37	4.6	0.79	4.85	0.36	0.41
10	4.34	0.81	4.04	1.18	4.20	0.86	0.68
11	4.45	0.8	4.13	1.23	4.37	1.01	0.70
12	3.97	0.85	3.96	1.17	3.65	1.25	0.66
13	4.66	0.58	4.65	0.64	4.67	0.88	0.48
14	3.95	1.01	3.79	1.17	3.93	1.18	0.59
15	4.58	0.64	4.46	0.65	4.70	0.65	0.57
16	3.89	0.92	3.58	1.27	3.53	1.33	0.55
17	4.45	0.72	4.54	0.68	4.67	0.66	0.55
18	4.08	0.85	3.96	0.99	3.88	1.21	0.71
19	4.21	1.23	4.48	0.95	1.52	0.95	0.45
20	4.18	0.8	3.73	1.12	4.30	0.85	0.71
21	4.39	0.92	4.38	0.7	4.43	0.89	0.58
22	4.08	1.12	3.88	1.21	4.03	1.07	0.60
23	3.68	1.14	3.19	1.41	3.43	1.31	0.41
24	4.39	0.82	4	1.07	4.25	1.07	0.76
25	4.45	0.69	4.1	1.1	4.23	0.95	0.82
26	4.42	0.79	4.27	0.89	4.42	0.89	0.69
27	4.74	0.5	4.54	0.87	4.68	0.57	0.65
28	3.97	1.17	3.63	1.27	3.75	1.37	0.68
29	4.37	0.82	4.25	0.89	4.40	0.83	0.72

Note: SD = Standard Deviation

Items	M	SD	% *
1. I am satisfied with the enrichment program <i>Estoy satisfecho con el programa de enriquecimiento</i>	4.63	0.5	100
2. The program fulfilled my prior expectations <i>El programa cumple con mis expectativas previas</i>	4.37	0.68	89.5
3. I am satisfied with the work of the mentors on the program <i>Estoy satisfecho con la labor de los mentores en el programa</i>	4.58	0.61	94.7
4. The program should be continued in future years <i>Se debería continuar con el programa en los próximos cursos</i>	4.84	0.37	100
5. The facilities where the program was carried out are suitable <i>Las instalaciones donde se lleva a cabo el programa son adecuadas</i>	4.63	0.50	100
6. The tasks of coordination and orientation between parents and mentors are carried out correctly <i>Las tareas de coordinación y orientación entre padres y mentores se realizan de forma correcta</i>	4.42	0.84	89.5
7. I believe that the enrichment program develops and strengthens the skills and abilities of my son/daughter <i>Creo que el programa de enriquecimiento desarrolla y potencia las habilidades y las capacidades de mi hijo</i>	4.53	0.61	94.7
8. I consider that the program promotes suitable values (discipline, respect, etc.) <i>Considero que el programa promueve unos valores (disciplina, respeto, etc.) adecuados</i>	4.37	0.68	89.5
9. The program is an important complement to the education received at school <i>El programa es un complemento importante a la formación que se imparte desde el colegio</i>	4.79	0.42	100
10. The program is well-organized and well-structured <i>El programa está correctamente organizado y estructurado</i>	4.32	0.67	89.5
11. The program helps to improve relationships with other children <i>El programa ayuda a mejorar las relaciones con los demás niños</i>	4.00	0.75	73.7
12. I would recommend participation on the program to other <i>Recomendaría la participación en el programa a otras familias</i>	4.95	0.23	100

*Note: D = Standard Deviation. The items of the Spanish version are in italics.*  
\* The Likert format five point response scale was dichotomized, with response options four and five considered as affirmative

<i>First year</i>
1. I am happy with my participation on the program (n = 9)
13. I have made new friends on the program (n = 9)
15. The friends I have made on the program are good friends (n = 8)
21. I talk about things that interest me with my fellow program participants (n = 5)
<i>Second year</i>
29. Since I have been on the program I have more new ideas (n = 8)
5. I would like to continue on the program (n = 7)
15. The friends I have made on the program are good friends (n = 7)
27. The program enables me to learn new things that I cannot learn at school (n = 5)
<i>Third year</i>
27. The program enables me to learn new things that I cannot learn at school (n = 6)
15. The friends I have made on the program are good friends (n = 6)
17. I am happy with my fellow participants on the program (n = 5)
13. I have made new friends on the program (n = 5)

*Note: The number of pupils who selected each item is shown in brackets*

I feel more capable
I understand things better
Since I have been on the program I have learnt many things that I may not otherwise have been able to learn
I have learnt to think
I feel more competent
The people here understand me
I have a lot of fun
I have become more intelligent
I feel much better; before I felt discriminated against and I had a hard time
My friends help me to solve problems because everyone is intelligent here
The mentors help me a lot
I do not feel alone
I have friends with whom I can talk about things that interest me
It is like a dream come true

Table 6

Aspects for improvement on the extracurricular enrichment program

Help for the most problematic participants
Do more science experiments and a greater variety of games
More projects in groups
The program should be more times a week
The workshops should be varied
Ask for access to a physics laboratory
Spend more time in class
Techniques for improving personal relationships
Outdoor activities
Cover more emotional intelligence, biographies of famous people, activists or politicians
More contact with pupils of other programs
More girls on the program
More robotics and computing
Higher degree of difficulty
Possibility of choosing workshops

and its optimum development is facilitated. In order to do this, in accordance with other authors (Renzulli, 2012; Subotnik et al., 2011; Dai & Chen, 2013), the biggest challenge is to modify the existing traditional approach with an education that is based on a scientific model or paradigm of HIA and attends to the intellectual functioning of high-level processes, management of cognitive resources and learning characteristics aimed at excellence. This implies that the efficacy of achieving the intended objectives must, necessarily, be tested (Van Tassel-Baska, 2012). In other words, the educational intervention should measure its efficacy through

forms of scientifically validated evaluation, an issue that is not always considered in the existing initiatives.

The experience presented in this study, based on an initiative of extracurricular enrichment, shows that this adjusted and efficacious educational practice to promote the development of HIA is possible, corroborating the results of other research (Van Tassel-Baska 2011; McCoach et al., 2013). The results obtained regarding the satisfaction of participants and families with the extracurricular enrichment program that they attended regularly, give guidance on its fit with the objectives that are the basis of the program, highlighting as achievements its contribution to personal development and optimization of cognitive functioning, as well as complementing the educational intervention received in regular school. It is interesting to note, not only the efficacy in achieving the objectives, but also the effect of the time of participation in the program regarding the persistence of the satisfaction achieved, which also suggests the need to re-structure the activities or content of the course in order to avoid the possible effect of wear.

Finally, a highlight of the results is the construction of an instrument that allows us to indirectly evaluate the efficacy of enrichment programs, and whose utility can be tested or proven by other studies aimed at measuring the efficacy of educational intervention programs, or in relation to other related constructs. All of this leads to strengthen the evaluation of the efficacy of educational intervention in HIA to determine whether it fits the reality and needs of the individuals concerned, with the basic objective of optimizing the expression of their potential.

#### Acknowledgments

This research was funded by a contractual agreement with the Ministry of Education, Culture and Tourism of the Government of La Rioja (2009-2013).

#### References

- American Educational Research Association, American Psychological Association & National Council on Measurement in Education (1999). *Standards for Educational and Psychological Testing*. Washington, D.C: Author.
- Bennett, G.K., Seashore, H.G., & Wesman, A.G. (2000). *Test de Aptitudes Diferenciales (DAT-5): manual*. Madrid: TEA Ediciones.
- Blanco, A., Sastre, S., & Escolano, E. (2010). Desarrollo ejecutivo temprano y Teoría de la Generalizabilidad: bebés típicos y prematuros [Executive function in early childhood and Generalizability Theory: Typical babies and preterm babies]. *Psicothema*, 22, 221-226.
- Brighton, C.M., Brown, E., Gubbins, E.J., & Moon, T.R. (2005). Institute on gifted program evaluation: Evaluating the effectiveness of services for gifted children. *Presentation at National Association for Gifted Children*. Columbus OH (november).
- Castelló, A., y Batlle, C. (1998). Aspectos teóricos e instrumentales en la identificación del alumno superdotado y talentoso [Theoretical and instrumental aspects in the identification of gifted and talented students]. *Faisca, Revista de Altas Capacidades*, 6, 26-66.
- Chacón, S., Sanduvete, S., Portell, M., & Anguera, M.T. (2013). Reporting a program evaluation: Needs, program plan, intervention, and decisions. *International Journal of Clinical and Health Psychology*, 13, 58-66.
- Chacón, S., Anguera, M.T., & López-Rioz, J. (2000). Diseños de evaluación de programas: bases metodológicas [Program evaluation designs: Methodological foundations]. *Psicothema*, 12, 127-131.
- Cronbach, L.J., Gleser, G.C., Nanda, H., & Rajaratnam, N. (1972). *The dependability of behavioral measurements: Theory of generalizability for scores and profiles*. New York: John Wiley and Sons.
- Dai, D.Y. (2005). Reductionism versus emergentism: A framework for understanding conceptions of giftedness. *Roeper Review*, 27, 144-151.
- Dai, Y.D., & Chen, F. (2013). Three paradigms of gifted education: In search of conceptual clarity in research and practice. *Gifted Child Quarterly*, 57, 151-168.
- Downing, S.M. (2006). Twelve steps for effective test development. In S.M. Downing & T.M. Haladyna (Eds.), *Handbook of test development* (pp. 3-25). Mahwah, NJ: Lawrence Erlbaum Associates.
- Haladyna, T.M. (2004). *Developing and validating multiple-choice test item* (3<sup>rd</sup> ed.). Hillsdale, NJ: LEA.
- Illinois Exemplary Program Handbook (1979). Springfield: Illinois Office of Education.
- International Panel of Experts for Gifted Education (2009). *Professional promotion of the gifted and talented: Recommendations for the qualification of experts in gifted education*. Salzburg: ÖZBF.
- Lord, E.W., & Cotabish, A. (2010). Snapshot survey of gifted programming effectiveness factors. In *Using the National Gifted Teacher Preparation Standards and NAGC Program Standards to Inform Practice*. Session presented at the 2010 Annual Meeting of the National Association for Gifted Children, Atlanta, GA.

- Lozano, L.M., García-Cueto, E., & Muñiz, J. (2008). Effect of the number of response categories on the reliability and validity of rating scales. *Methodology, 4*, 73-79.
- Matthews D.J., & Foster, J.F. (2006). Mystery to mastery: Shifting paradigms in gifted education. *Roeper Review, 28*, 64-69.
- McCoach, B., Rambo, K., & Welsh, M. (2013). Assessing the growth of gifted students. *Gifted Child Quarterly, 57*, 56-67.
- Moreno, R., Martínez, R., & Muñiz, J. (2006). New guidelines for developing multiple-choice items. *Methodology, 2*, 65-72.
- Muñiz, J., García-Cueto, E., & Lozano, L.M. (2005). Item format and the psychometric properties of the Eysenck Personality Questionnaire. *Personality and Individual Differences, 38*, 61-69.
- Renzulli, J.S. (2012). Reexamining the role of gifted education and talent development for the 21st century: A four-part theoretical approach. *Gifted Child Quarterly, 56*, 150-159.
- Rios, J., & Wells, C. (2014). Validity evidence based on internal structure. *Psicothema, 26*, 108-116.
- Sastre-Riba, S. (2013). High intellectual ability: Extracurricular enrichment and cognitive management. *Journal for the Education of the Gifted, 36*, 119-132.
- Sastre-Riba, S. (2014). Intervención psicoeducativa en la Alta Capacidad Intelectual: funcionamiento intelectual y enriquecimiento extracurricular [Psychoeducational intervention in high ability: Intellectual functioning and extracurricular enrichment. *Revista de Neurología, 58*, 589-598.
- Schmeiser, C.B., & Welch, C. (2006). Test development. In R.L. Brennan (Ed.), *Educational Measurement* (4th ed.) (pp. 307-353). Westport, CT: American Council on Education/Praeger.
- Schraw, G., & Dennison, R.S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology, 19*, 460-475.
- Sireci, S., & Faulkner-Bond, M. (2014). Validity evidence based on test content. *Psicothema, 26*, 100-107.
- Subotnik, R.F., Olszewski-Kubilius, P., & Worrell, F.C. (2011). Rethinking giftedness and gifted education: A proposed direction forward based on psychological science. *Psychological Science, 12*, 3-54.
- Torrance, E.P. (1974). *The Torrance Test of Creative Thinking: Norms-technical manual*. Bensenville, IL: Scholastic Testing Service.
- Van Tassel-Baska, J. (2012). Curriculum issues: Curriculum, instruction, and assessment for the gifted: A problem-based learning scenario. *Gifted Child Today, 36*, 71-75.
- Van Tassel-Baska, J. (2011). *An evaluation of the Gifted Programs in Bellevue*. Washington: College William and Mary.
- VanTassel-Baska J., MacFarlane, B., & Feng A. (2006). A cross-cultural study of exemplary teaching: What do Singapore and the United States secondary gifted class teachers say? *Gifted and Talented International, 21*, 38-47.